

Biometrics or bust The security technology continues to win converts. PAGE 24.

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October 7, 2002 Volume 19, Number 40

Quality question remains for VoIP

BY PHIL HOCHMUTH

Is the voice in voice over IP good enough to bet your business on?

That's the make-orbreak question for many

network executives as they consider the promise of integrated voice/data. And it's one of several key questions we'll try to answer in this four-part series designed to help companies plotting convergence strategies.

Most users and industry watchers say it's relatively easy to achieve toll quality in the lab, but

it can be more difficult in a production network. That helps explain

why some companies see a future with VoIP everywhere, while others are hesitant to use it on critical links, or for customer-facing applications, such as in call centers or

See Convergence, page 71

Fed plan exposes 'Net's weak links

■ BY CAROLYN DUFFY MARSAN

In the fine print of the Bush administration's recently released cybersecurity strategy is the stark admission that three critical components of the Internet's infrastructure are highly vulnerable to a variety of attacks.

The three troublesome components underpin all Internet communications. They are: IP; DNS, which matches lengthy, numeric IP addresses to simple names for Web and e-mail traffic; and Border Gateway Protocol (BGP), which controls interdomain routing between carriers.

All three lack a means of authenticating communications. Although the Internet engineering community has spent more than a decade trying to retrofit these protocols with encryption and digital signatures, the security

661'm very much in favor of these efforts to improve the security of BGP, IP and DNS. But I don't think the problem is the protocols. 77

Steve Bellovin, an AT&T researcher and IETF director

Barry Grant, CTO at Manhattan's Municipal Credit Union, learned a hard lesson on Sept. 11. Now, like many companies,

3 MCU is installing a real-time data-recovery system based on redundant data centers.

Vendors set to launch **VolP volley**

■ BY TIM GREENE AND PHIL HOCHMUTH

ATLANTA— As the Voice on the Net Conference show opens this week, vendors remain bullish that, despite the sluggish economy, corporations will adopt their new products or services that blend voice and data traffic over IP.

Voice-over-IP (VoIP) service providers, including WorldCom,

See VON, page 72

fixes aren't widely used by ISPs or their corporate customers because of the high cost and management overhead involved.

"We've been trying to push security into these protocols for years, but we've gotten no involvement from the operational side of ISPs or enterprises," says Russ Mundy,

manager of network security research at Network Associates Laboratories. Now that the security offerings for these protocols are done or close to being done, the ISPs and other potential customers claim the offerings aren't practical or affordable, he says.

See Security, page 16



66We have no intention of walking away from NetWare.

Novell's new CTO Alan Nugent speaks out on

- NetWare's future.
- How Web services fit in.
- Why the company's SilverStream buyout matters.

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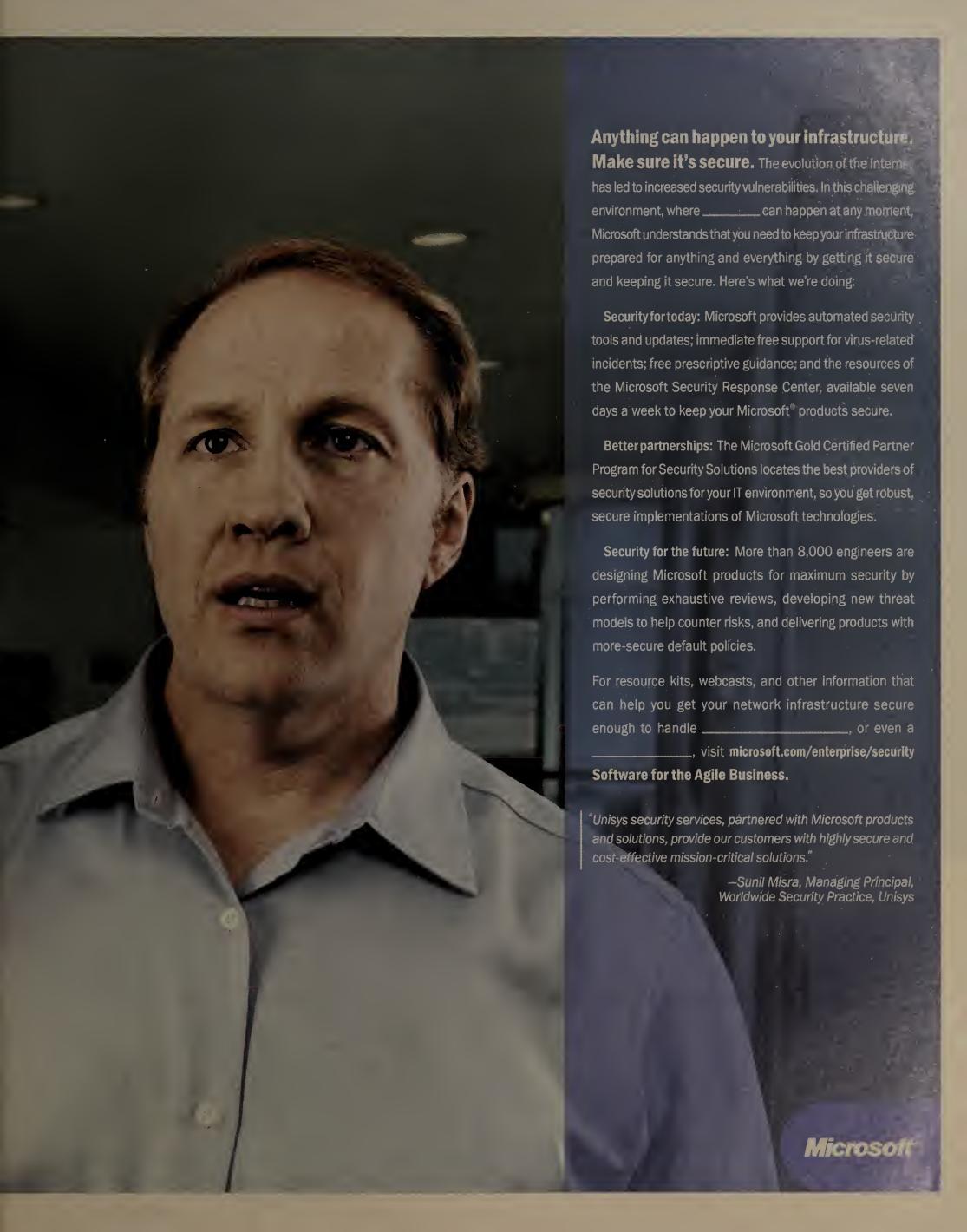
There's a new

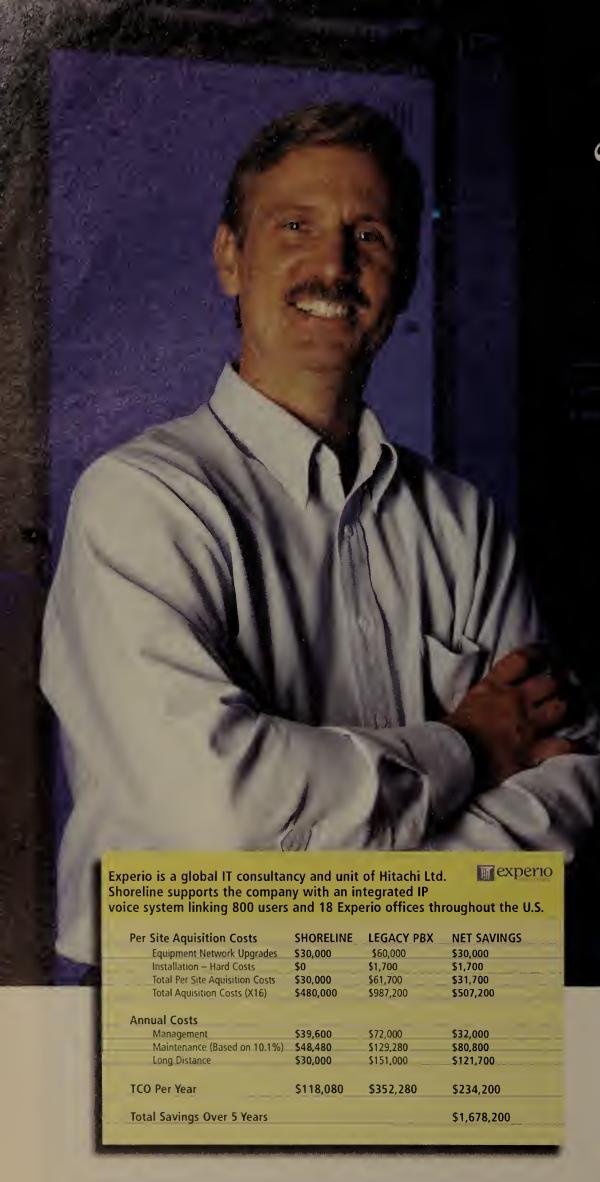
on

the Web.

Are we secured

against that? 77





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Optical multiplexers are finding a niche in enterprise networks.

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Barry Grant, CTO at Manhattan's Municipal Credit Union, learned a hard lesson on Sept. 11.

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Interactive

IBM eServer xSeries x440 review

Get online-exclusive performance charts, how we conducted our tests and more details from our review.

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Microsoft Exchange Weblog

Get the absolute freshest Microsoft Exchange news and analysis next week as Senior Editor John Fontana writes a Weblog from the Microsoft Exchange Conference, starting Tuesday.

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Your Microsoft wish list

What do you want to see from Redmond? Participate in our ongoing Vendor Wish List series.

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Columnists

Compendium

What is bandwidth and why is it important?
Fusion Executive Editor Adam Gaffin points to The University of California, Irvine, which has an interesting paper documenting its traffic-shaping policy for students.

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Help Desk

Frame relay or ADSL?

Columnist Ron Nutter helps a user who is trying to decide between frame relay and DSL for connecting remote offices.

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SOHO Tech

Broadband back-up basics

Columnist James Gaskin examines dual-port routers and how they can help small businesses stay connected.

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View from the Edge

Warnings season

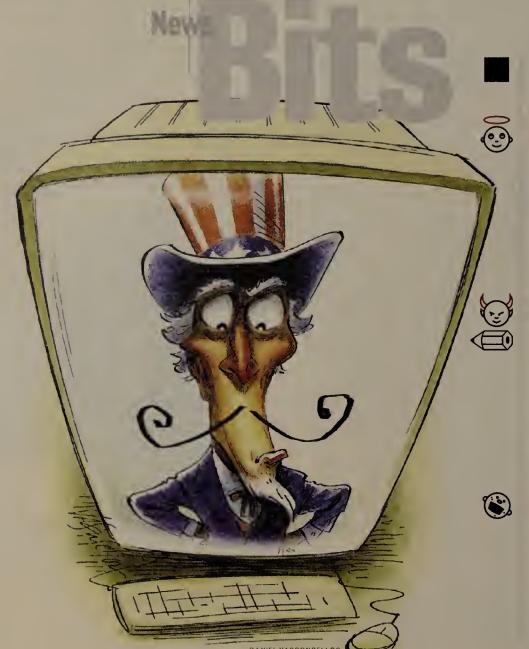
The Edge Managing Editor Jim Duffy says Nortel and Sonus Networks are the latest reminders of a deteriorating telecom market.

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TheGoodTheBadTheUgly

Making flaws known. Software and security vendors are getting together to discuss reporting strategies for security flaws, balancing the right of users to know whether their software is flawed against the possibility that publicizing vulnerabilities might encourage hackers. The Organization for Internet Safety will develop a system to set standards for the way security vulnerabilities are disclosed. Members include @stake, BindView, Caldera, Microsoft and others, and an advisory board of network security managers will be formed.

Web makeovers. The number of Web site defacements has reached an all-time high with more than 9,000 attacks in September — 54% more than the previous record of 5,830 defacements discovered in August, according to London security consultancy mi2g. There has been rising antagonism across the digital world against the U.S., which has seen defacements of sites belonging to the U.S. House of Representatives, Department of Agriculture and Department of Education, among others. The consultancy says hackers are finding an increasing number of vulnerabilities in operating systems, Web servers and more.

R&D it and weep. A *Financial Times* survey shows a worrisome drop in research-and-development spending among key Silicon Valley companies. Of the 30 top Silicon Valley companies surveyed, 16 reduced R&D spending in the first six months of this year by an average of 5% to \$11.9 billion from \$12.5 billion in the same period a year ago, according to the report. Among those firms that reduced funding were Agilent, Cisco and Sun. (Ten companies, including Intel, increased funding, while the others left spending unchanged.)

WorldCom suffers outage

of Internet traffic, suffered a major outage last week that slowed or disrupted service for customers, Internet providers and rival carriers worldwide. Latency across WorldCom's network was up around 900 msec throughout the day and packet loss exceeded 22%, according to Matrix Network Systems, a company that monitors Internet performance for enterprise users. The Internet typically operates with about 50 msec of latency and about 0.05% packet loss, says Tom Ohlsson, vice president of marketing and business development at Matrix. The outage was significant because WorldCom operates 30% of the capacity on the 20 largest U.S. backbone routes. WorldCom's network outage started Thursday at about 7 a.m. EST after technicians uploaded new software to the carrier's border routers, Ohlsson says. WorldCom would not confirm these details for Network World, but Ohlsson says his group was given detailed information about the cause of the outage directly from the carrier. Latency and packet loss started to improve late in the day. Matrix's Ohlsson says this nine-hour network slowdown is "unprecedented in the brief but significant history of the Internet." The event didn't do anything to improve WorldCom's image with already concerned customers who fear the carrier's legal woes and personnel cutbacks are hurting its ability to provide top-notch services. WorldCom let up to 16,000 employees go after it filed for bankruptcy protection in July.

■ WorldCom's UUNET network, one of the world's biggest carriers

Sprint CEO blasts WorldCom

■ As if WorldCom's outage wasn't bad enough, Sprint Chairman and CEO William Esrey took a shot at the scandal-ridden carrier last week saying the accounting fraud that brought down WorldCom and tainted a number of telecom companies has left "a lingering stench that has poisoned our industry." In a keynote address at Internet World Fall 2002, he said: "We kept asking ourselves what we were doing wrong because we couldn't generate the numbers WorldCom reported. As we discovered, the margins were a hoax, but the devastating effect on our industry was very, very real."

More CFO shenanigans

■ Veritas' name might mean truth in Latin, but the storage software company's CFO must have missed class that day. The software maker last week announced CFO Kenneth Lonchar was let go after it learned he had claimed falsely to have earned a master's degree from Stanford University. Veritas said the discovery of Lonchar's misrepresentation has no bearing on the accuracy or quality of its financial results.

And one for you

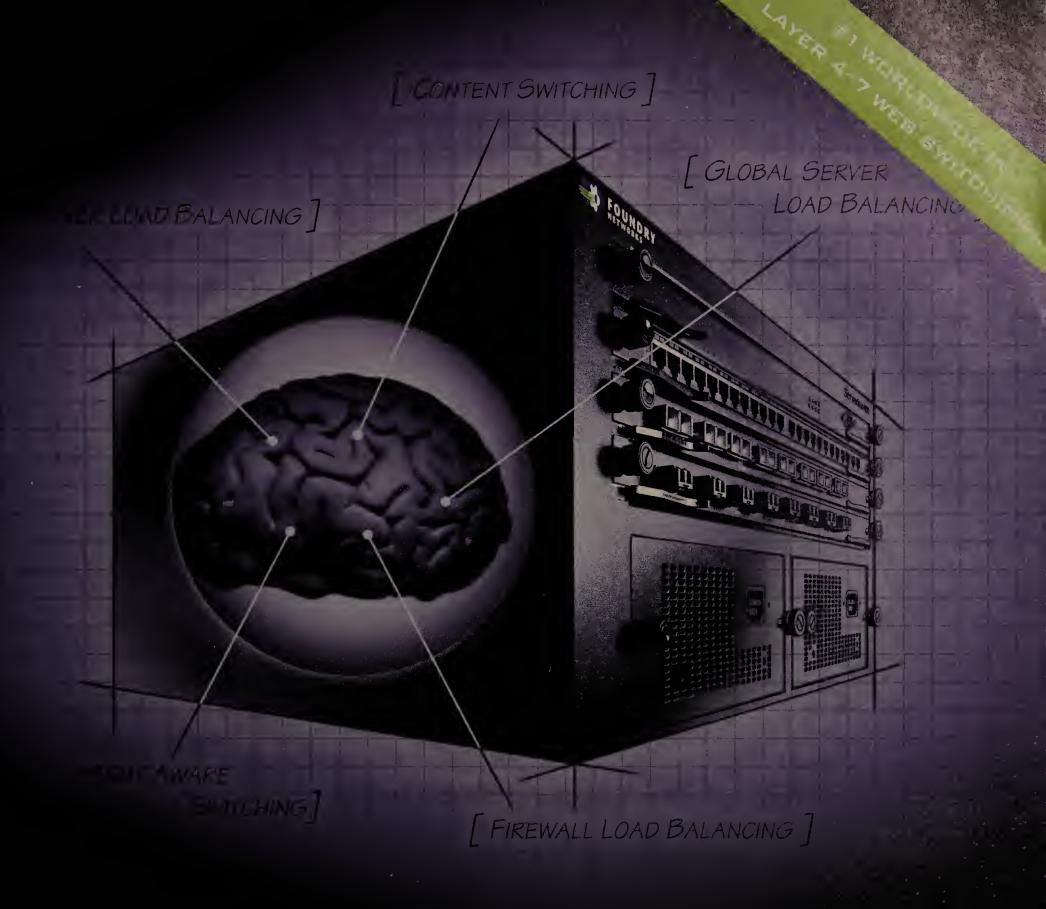
■ Cisco CEO John Chambers was paid only \$1 for running the network equipment giant in fiscal 2002, the company reported in its annual proxy statement to shareholders last week. Chambers requested his base salary be lowered to \$1 in April 2001 as the company cut costs and laid off thousands of employees. Before the pay cut, he earned \$268,131 in 2001. In 2000, the last full year before the pay cut, he earned \$323,319. During the year that ended July 27, Chambers accepted 4 million stock options and declined 2 million. The options could be worthless unless Cisco's stock meets certain targets.

COMPENDIUM

Microsoft is not going to hell

Google apparently has tinkered with its site ranking and sorting algorithms to reduce the occurrence of such odd results as "Microsoft" coming up as the first result on a search for "going to hell." The move also could reduce Googlebombing, or efforts to drive up one site's rankings by having lots of other sites arbitrarily point to it.

Read more at www.nwfusion.com, DocFinder: 2543.



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Commerce-tested search tool bows

BY JENNIFER MEARS

CAMBRIDGE, MASS. — Software developer Endeca. which is boosting sales for companies such as Barnes & Noble by making it easier for buyers to find what they're looking for online, is bringing its guided navigation search technology to corporate intranets.

The company will announce ProFind, an enterprise search product based on the Navigation Engine that powers Endeca's In-Front e-commerce software, at this week's Gartner Symposium/ITxpo in Orlando.

While InFront primarily is used with commerce catalogs, ProFind can be used to manage structured and unstructured content within a company, letting business users search everything from documents, PDFs and enterprise resource planning data.

The software works by extracting data from corporate

databases, and from unstructured content sources such as e-mail messages and Web pages, and indexing it in the Navigation Engine.

The information then is searched using what Endeca calls guided navigation. Guided navigation goes a step beyond traditional searches by providing users with a list of subheads to help narrow the search.

The subheads listed on the search screen change dynamically as the search proceeds, weeding out dead ends.

Guided navigation helps guard against what the company calls the million or none problem with traditional searches: underspecified queries based on a few words that return long lists of options, and overly specific queries that turn up nothing.

"We turn that paradigm on its head," says Paul Whitelam, product manager at Endeca. "We show the user the choices that they can make to refine a search result. When you get a result set returned by Endeca, that's really the beginning of your exploration," he adds.

For example, an engineer searching an automotive database for the specification for paint used on Ford's bumpers starts by typing the word "bumper" into the search box. That returns about 500 results from 40,000 available documents.

Endeca also returns a number of subheads that the Endeca Navigation Engine dynamically generates from the metadata in the current set of documents.

Clicking on the "sources" option, shows sources of relevant documents. The engineer clicks on Ford, reducing the number of results to about 190. As additional subheads are clicked, the list of results narrows.

Unlike taxonomy-based search

tools, Endeca updates navigation options at each click so users aren't forced down a path defined by a taxonomist. This all provides context to the search, letting users intelligently explore available information, even finding data they might not have known existed, Whitelam says.

Endeca executives say that because Endeca indexes metadata extracted from databases, the software is scalable and doesn't demand high-end hardware that some other search vendors require.

Information Handling Services Engineering, a provider of technical standards, specifications, logistics and parts information in Denver, scrapped "four Sun 880-class machines with a lot of redundant disk space" when it moved from Convera's search product to Endeca earlier this year, says Paul Magin, vice president of product development at IHS.

Reducing hardware costs

IHS replaced the Sun servers with three x86 Solaris boxes, cutting annual hardware costs by about \$100,000, Magin says. That should slice annual hardware and administration costs in half, he says.

IHS also found it was easier to load content into the Endeca system. Five applications used to manage more than a million documents were migrated from Convera and other search systems in seven weeks. That compares with three months to build a single application with the old tools, Magin says.

At the same time, users have experienced a fourfold increase in the response time for their searches. "The performance was astounding," he says.

Updating content also is easier, Magin adds.

"In Endeca we can quickly model an extract of our main collection and index it in a few hours," he says.

Analysts say information overload is costing millions of dollars in lost productivity because of time wasted searching for information. IDC estimates that knowledge workers spend 15% to 33% of their time looking for information and are unsuccessful about half the time.

With most search tools, users end up frustrated because they're not asking questions correctly and not getting the answers they need, says Sue Feldman, research vice president of content management and retrieval software at IDC. Guided navigation improves on a search by providing choices to users to help them search smarter, she says.

"So somebody can say,"Oh, I can go here or I can look there. I didn't realize that.' Avoiding dead-ends is also important so you don't send people away discouraged. Endeca does all of those things," she says.

Profind is available immediately starting at about \$100,000 per license, although pricing is dependent on a number of variables, including number of users and feature.

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Nortel to speed up firewall throughput

■ BY PHIL HOCHMUTH

SANTA CLARA — Nortel this week will announce three new versions of its firewall family that could help businesses support Gigabit-speed traffic into and out of data centers, while applying stateful packet inspection to incoming traffic to protect corporate servers and data stores.

The Alteon Switched Firewall (ASF) products consist of a Firewall Accelerator, which provides load balancing for a cluster of up to six Firewall Directors, or hardware appliances built by Nortel running Check Point Software firewall software. Nortel says having a Firewall Accelerator off-load

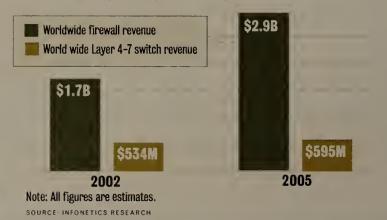
packet processing from a firewall appliance and distributing traffic among multiple firewalls in a cluster can improve packet inspection performance over stand-alone firewalls. This could help corporate applications or Web servers in a data center run more quickly, while remaining secure against external or internal intrusions.

Redundant ASF Firewall Accelerators on the front end also can be set up to provide failover, Nortel says.

The new ASF 5710 is targeted at large companies and carriers. The Firewall Accelerator component to the ASF 5710 comes with nine Gigabit Ethernet interfaces and can provide up to 42G bit/sec of packet inspection

Firewall product bundle

With its Alteon Switched Firewall (ASF) system, Nortel is marrying Layer 4-7 switching with firewalls, two technologies growing at rapidly different rates.



throughput, according to Nortel. The ASF 5710 can handle up to 500,000 concurrent stateful packet inspection sessions, more than twice the amount supported on the previous highend ASF 5610 system.

For midsize to large companies, the ASF 5408 comes with nine 10/100M bit/sec ports on the Firewall Accelerator box and can provide up to 600M bit/sec of stateful packet inspection as a system. The system is intended to sit in front of a Web farm or data center.

For smaller businesses or enterprise branch offices, the ASF 5104 could be deployed in a small data center or Web server farm, or at the edge of a network. Four 10/100 ports on the ASF 5104 consists of only a Firewall Director,

with four 10/100 ports, and now a Firewall Accelerator component. The ASF 5104 provides up to 300M bit/sec of firewall throughput.

Nortel also has made upgrades to the specialized version of its WebOS software that runs on the Firewall Accelerator component of ASF. The software now has support for identifying virtual LAN tags, which could be used to keep traffic from specific VLANs in a large company from reaching certain areas of the network. Also added is support for Jumbo Frames, which allows support for Ethernet frame sizes as large as 9K bytes, compared with the standard 1.54K byte size. Jumbo Frames often are used to speed access to

Gigabit Ethernet file and Web servers. Allowing Jumbo Frames to pass through the ASF system could help ensure that large file transfers into a data center are fast and secure.

The ASF product combination is similar to competing technologies from Foundry Networks, which promises similar firewall load balancing with its Serverlron products. Cisco's high-end PIX firewall also advertises similar performance numbers — up to 1G bit/sec of throughput and 500,000 concurrent connections.

The starting price for the ASF 5710 is \$64,000, and the ASF 5408 starts at \$43,000. The ASF 5104 costs \$5,500. All products are available now. ■

Challenge Complement Free Inspire Recognize 10 NetworkWorld 10 7 02 News www.nwfusion.com

Microsoft readies Exchange for future

BY JOHN FONTANA

ANAHEIM, CALIF - Microsoft's annual Exchange user conference this week will be somewhat of a strategic juggling act as the company highlights the product's future while trying to continue developing an efficient messaging infrastructure.

The company also will have a third ball in the air with the ongoing task of convincing users to adopt Exchange 2000 — which more than 70% of the installed base has yet to embrace — while fighting off competition from lowcost alternatives to such a move.

Microsoft's challenge is to show corporations the value of Exchange as it evolves into its role in Microsoft's .Net Web services strategy, including why some of Exchange's traditional features such as instant messaging and conferencing are moving to the Windows .Net Server 2003 operating system. That switch will have a direct effect on IT as responsibility for some collaboration functions moves from Exchange administrators to network operating sys-

Tweaking Exchange

At Microsoft's annual Exchange conference this week the company hopes to show how the next version of the platform, code-named Titanium, will reduce the cost and improve the efficiency of running the messaging platform.

Strategy	Feature	Description	
Server consolidation	Volume Shadow Copy	Quick restore feature allows more users per server fewer servers.	
	Compression	Efficient use of bandwidth for more populated servers.	
	MAPI enhancements, MAPI over HTTP	Messaging API made more efficient; HTTP wrapper provides better remote access.	
Security	S/MIME support; cookie authentication	Signatures, encryption for Outlook Web Access users automatic log-off using cookie.	
	Spam blocking	Server supports real-time connection to spam blacklists.	
	Spam Beacon blocking	Prevents HTML-based e-mail from grabbing users' addresses.	
Availability	Clustering	Up from two nodes to eight.	

tem administrators.

Microsoft's Paul Flessner, senior vice president of .Net Enterprise Servers, will use his opening keynote address to explain how the .Net platform and especially Windows.Net Server foster a "connected enterprise." And he will

offer details on how the forthcoming real-time communication server embedded in the operating system, code-named Greenwich, will support instant messaging and replace the Exchange Conferencing Server.

He also will announce that Con-

tent Management Server 2003 is shipping and its future .Net integration with Microsoft's other business servers, such as the Commerce and BizTalk servers.

But details on the future must be juxtaposed against the next version of Exchange, codenamed Titanium, which is not Microsoft's full .Net release. That release, code-named Kodiak, likely won't ship for two years.

So the Titanium message will focus on the fail-safe issue of reduced cost of ownership.

It's the same message used by rival Lotus last week when it released Domino 6, which also is an incremental step in Lotus' move to a Web services platform based on IBM's WebSphere.

"Both these companies are working harder to justify upgrades by appealing to the corporate pocketbook," says Matt Cain, an analyst with Meta Group. "So what you get out of that is messages about server consolidation and compression."

Those were the themes hit on by Lotus last week, and Microsoft will harp on them this week. Titanium has a number of features that support server consolidation. Microsoft also has made its Messaging Application Programming Interface (MAPI) more efficient by reducing chatter between the client and server, and added new compression technology to handle the additional mailboxes and traffic on each server.

change 2000, which is made complex by the need to upgrade to Microsoft's Active Directory.

"I have zero interest in Titanium now," says George Defenbaugh, manager of global IT infrastructure projects for petroleum company Amerada Hess."I am stuck in the complexity of running Exchange 5.5 and Exchange 2000 in mixed mode and am having problem after problem with the Active Directory connector. The focus now is just to get done with this Exchange migration."

But the Titanium message might play to those who are sitting on Exchange 5.5 and considering a move to one of the lower-cost alternatives that has cropped up touting the ability to replace the Exchange server and integrate with Outlook, the client for Exchange. The message is attractive because it eliminates end-user training in that client software doesn't change.

"Our cost analysis shows a 40% savings over Exchange for smaller organizations and as much as a 70% savings for larger organizations," says Joanne Menapace, product marketing manager for Stalker, which this week released its CommuniGate Pro Mail Server 4.0, which supports Outlook and all the published MAPI interfaces.

Experts say such alternatives are getting Microsoft's attention.

"We have seen an uptick in interest in products like these, particularly if they have support for MAPI, which lets you do such things as calendaring," says Joyce Graff, an analyst with Gartner. "Exchange is under a great deal of pressure."

Cisco adds IOS to wireless

■ BY JOHN COX

Network executives now can extend the controls they use in their Cisco backbones to wireless LANs from the same vendor.

The Cisco Aironet 1100 access point, unveiled last week, is the first wireless product to use the company's IOS operating software. IOS runs in all Cisco network hardware, and is designed to create a uniform means of controlling and provisioning the network. Until now, the Aironet wireless products used a third-party real-time operating system.

With this introduction, the 1100 gives wireless LAN managers three new capabilities. With Proxy MobilelP, IOS lets end users move between wireless subnets without losing their session. With support for virtual LANs, managers now can create up to 16 separate network segments, and group them based on security requirements or traffic type, such as voice or data. Finally, quality of service makes it possible to set wireless traffic priorities, giving precedence to time-sensitive traffic such as transaction processing or voice packets.

The 1100 access point now can be managed by a number of Cisco management applications developed for IOS-based hardware on the wired network.

Many network professionals are already familiar with IOS, says Aaron Vance, industry analyst for Synergy Research Group. That means they can work immediately with the new 1100 model, using many of the existing IOS commands and tools already developed for the wired network.

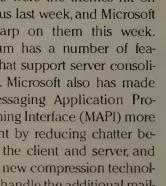
The 1100 incorporates the familiar IOS commandline interface and a completely redesigned Web interface for administrators, says Ron Seide, product line manager for Cisco's wireless networking business unit. Over time, Cisco will add a growing number of IOS features to the Aironet products, extending to wireless LANs the same level of control and security that now exist on the wired LAN.

The Aironet 1100 can be managed via SNMPbased network management applications. The access point, via IOS, also can be controlled via Cisco's Resource Manager Essentials, an application that inventories software packages, called images, which can then be automatically deployed to and installed on scores or hundreds of network devices.

In early 2003, Cisco will introduce a firmware upgrade for its higher-end Aironet 1200 access point, also adding IOS to these devices.

Cisco's idea of loading more intelligence into the access point differs from that of several wireless LAN rivals. For example, Proxim and Symbol both use separate controllers between the wireless LAN and the wired network to add centralized control over the access points, as well as security and switching features, according to Vance.

The \$600 list price, although a new low for Cisco, is still \$200 to \$400 more expensive than many other access points, Vance says. Some vendors such as LinkSys and Buffalo offer 802.11b access points for less than \$200. Cisco makes the case that features such as IOS, high-quality parts and metal construction, justify the premium.



But the Titanium message might be lost on users who are trying to get from Exchange 5.5 to Ex-



THIS WEEK'S QUESTION:

The next major version of which Microsoft product is code-named Titanium?

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QA

New CTO lays out Novell's vision

NetWare is here to stay, but services will expand to other operating systems.



Later this month, at an event headlined by former New York Mayor Rudy Giuliani, Novell will announce the rebranding of its products in four key categories. Alan Nugent, the company's new CTO, says that effort is in line with Novell's mission to match its technical expertise with stronger marketing. He spoke with a group of Network World editors last week about where he sees Novell heading.

What's your vision for Novell?

When Novell announced OneNet [two-and-a-half] years ago, the intent was to provide a framework for the growth of the company — where we wanted to be when we grew up. It was also a message to the market that said, 'We're a company that provides products, solutions and services that allow you to have information without boundaries from any device at any time.' When the company made that announcement, it was not really able to deliver across the entire spectrum. Now we are. We've spent a fair amount of time looking at the market and trying to figure out what we needed to do to complement the OneNet vision. The final piece of that was our acquisition of SilverStream and bringing Web services development into OneNet. The company has now focused around four areas: secure identity management, Web services development, cross-platform network services, and consulting and technical services.

What's the future of NetWare and how will it fit into your vision for Novell?

The market looks at us and sees a NetWare company. That's an image we need to change. NetWare is an underpinning of the vision, just as other technologies are. Our client base is large and strong — certainly not as large as Microsoft's, but with 90 million users out there and quite a few million servers, we have a loyal and happy installed base. We want to give NetWare users more options — a development environment for applications that can run on Net-Ware. Our tact is to strengthen the NetWare base, but also recognize that the market is less concerned about the [operating system] today. Since the value of NetWare is the services it provides, why not take those services and put them on different platforms?

Where does your 64-bit version of NetWare for the Itanium processor stand?

There is a large team working on the next-generation of NetWare. We have an internal project called Nakoma. SilverStream is porting its application server to

Nakoma so we will have an application delivery platform. In terms of 64-bit, there is running code.

What is Novell doing with Linux?

We are in active discussions with folks in the Linux space. While I don't want to get into a lot of detail here, let me say that Linux is a critical platform for our future.

Novell has revived BorderManager and introduced the SecureAccess suite, which both include caching. Novell's Volera subsidiary also does caching. How does this all shake out in an environment where other caching companies are dying off or changing their focuses?

[Our different efforts] are not uncomplementary. Volera is still a key technology. We are continuing to invest in the company. There are some product and feature issues we need to resolve, but we expect [Volera] to grow this year.

You have implemented products such as Volera

Excelerator and NetDevice NAS as soft appliances that users install on industry-standard servers. Where are you going with soft appliances?

We think of [soft appliances] as network services. As you look at NetWare services such as clustering, file, print and mail, we are extracting those away from the [operating system] so they can run on any platform. At the same time, we have no intention of walking away from NetWare.

Is Novell going to offer platform-independent Web services?

Yes. We will continue to evolve the [SilverStream] exteNd family to be agnostic. While it may be in the back of everyone's mind [here] to look at Novell products, if a customer wants to use a product such as Netegrity's SiteMinder instead of [our] iChain, that's what we'll [sell them.] Our credibility is based on our agnosticism.

The market looks at us and sees a NetWare company. That's an image we need to change.

Do you have evidence that there's really a market for Web services technology?

www.nwfusion.com

It depends on if you believe what the analysts are saying. There's clearly a market for enterprise application integration; Web services are the most dominant application in that space. While its not a multibillion market yet, there

is something broader than just UDDI [Universal Description, Discovery and Integration] and WSDL [Web Services Description Language].

Is there any demand for a UDDI server?

There's a need for two UDDI servers — an enterprise-class server based around [our] eDirectory and a lightweight personal development server for testing the building of Web applications. The enterprise server is under development in Provo; the personal version is included in exteNd.

What is Novell doing to free up resources to take on these initiatives?

We had a product review in July Senior management listened to every product manager to hear the road maps of what they intended to do. Management then stood back and applied a filter to it that said where we want to go and saw what fell off the table. This is key for us because in the past Novell had developed upwards of 160 products, and all those people acted as if they were their

own little companies.

Novell to expand Web services

ovell plans to announce as soon as the first quarter of next year a new version of the exteNd Web services software it obtained through its acquisition of middleware vendor SilverStream in June.

Version 5.0 will incorporate parts of Novell technologies, including its directory, portal and secure identity management offerings, and exteNd's application server will be ported to NetWare. In addition, Version 5.0 will boast compatibility with Java 2 Platform Enterprise Edition 1.3 and feature support for advanced portlet technology as outlined in Java Specification Reference 168, says Frank Auger, a former SilverStream executive who is now vice president of product marketing for Web services development at Novell.

In addition to the application server, Novell's exteNd line consists of portal services, legacy application integration software and application development tools.

— Deni Connor

What fell off the table?

They don't have much meaning in the outside world — they were products that were experimental or Web-related. Because of the SilverStream acquisition, they were not necessary.

If you look across the product family today, if it has to do with secure identity management, those activities remain staffed.

We want to have the ZENworks product family. To become less confusing to the market, we decided to pull individual products into a product area. When we look at the future of ZENworks, we think of Web services. We are also interested in the provisioning of blade servers. The product family wouldn't be complete if we didn't address that somehow.

We will be making announcements around our four focus areas that will tell you which products are still on the table and which are not. ■

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10/7/02 News 14 NetworkWorld www.nwfusion.com

Symantec opens security mgmt. suite NetworkWorld

BY ELLEN MESSMER

NEW YORK — Symantec last week unveiled a set of security applications it says will help network executives control and correlate corporate security efforts.

The Symantec Security Management System will let the company's event management and incident management tools talk to each other, and ultimately integrate with non-Symantec tools. The management system is built on Symantec's Enterprise Security Architecture (SESA), the common foundation that all Symantec products will be based on. This platform will let security tools run on Microsoft, Linux, AlX, Unix and other platforms.

Security information management (SIM) products such as SESA use data aggregation and event correlation features similar to those of network-management software and applies them to event logs generated from security devices such as firewalls, proxy servers, intrusion-detection systems and antivirus software.

For SESA to succeed, Symantec will benefit from getting as many security vendors as possible on board with the idea of supporting its planned Symantec Security Management System (SSMS) by having them write software for sharing data with it. To that end, Symantec has launched a "partner program" to get vendors to build so-called "collectors" that would collect event data from their equipment to share with the Symantec package. More than a dozen vendors last week at Symantec's SIM debut in New York said they would support Symantec's basic SIM architecture (see graphic, right).

The first version of SSMS that Symantec plans to ship by the end of this month is expected to only work with Symantec's intrusion-detection and antivirus products. Support for Symantec's Raptor firewall won't be added until year-end, says John Heath, Symantec's senior product manager.

Some heavyweights in the security industry with SIM ambitions

Support network

Vendors backing the **Symantec Security Management System:**

- Arbor Networks
- Ponte
- Blue Coat
- Qualys
- Systems
- Radware Rainfinity
- Cenzic
- RSA
- IBM
- Security SilentRunner
- ManageSoft

Clearswift

- Netegrity
- Sün Vigilante

of their own were noticeably absent from Symantec's New York SIM coming-out party, namely Check Point Software Technologies and Internet Security Systems, these days in close partnership with Network Associates, Symantec's chief rival in antivirus

But Symantec says it is writing "collector" software for the Check Point firewall, the ISS RealSecure sensors and the NAI's ePolicy Orchestrator console for virus-software management.

Ryan McGee, NAI's director of product marketing, said a year ago when NAI added a way for its ePolicy Orchestrator to collect information about Symantec Norton AntiVirus and take action on it, Symantec objected. "But turnabout is fair play, and what they're doing validates our approach," McGee says. "But we don't plan any close Network Associates-Symantec alliance."

Phoenix electronics distributor AVnet, which is beta testing the SSMS, says the product does a good job collecting events from Symantec's IntruderAlert IDS and the ISS RealSecure IDS that AVnet uses.

"At this point, the payback is that we get one centralized console for them. But for any sort of advanced correlation of events, it will take a lot more integration," says Steve Jeffers, Avnet's manager of enterprise security services.

Symantec: www.symantec.com

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IBM automates management software

New products incorporate technology from Project eLiza.

BY ELLEN MESSMER AND DENISE DUBIE

ORLANDO — IBM's Tivoli software group this week will unveil upwards of 25 upgraded products, all which now exploit automated computing technology that first showed up in IBM servers.

Tivoli says the upgrades in its performance and availability, configuration and operations, and security and storage management software now can automatically take actions based on information and models built into each product. The upgrades take advantage of technology developed through IBM's Project eLiza, which involves hardware and software that can perform self-healing, self-configuring, self-protecting and self-optimizing functions.

"The software can monitor for events or series of events and take the actions that the user wants," says Steve Wojtowecz, director of strategy for Tivoli.

Correction

■ In the "Cont Tools" column titled "Con n cting to Sprint's new network," (Supt. 30, page 36) the retail price of the Handspring Theo 300 shell d have been \$500.

Big investment

Project eLiza, announced in May last year is a

IBM initiative to deliver intelligent hardware and software.

Among the upgrades is IBM Tivoli Monitoring for Databases, which now includes a model for Oracle databases and preset thresholds that when triggered by an event will take action to prevent or solve a problem.

Some of the automated functions will work out of the box, while others will require customization.

Tivoli also will introduce identity and storage management products enhanced with technology IBM acquired this year through its purchases of Access360 and TrelliSoft.

IBM, working with VeriSign, also this week will start providing a managed service for corporations that would prefer to outsource authentication of employee or e-commerce partner passwords and certificates than purchase and maintain their own access control server.

The VeriSign Access Management Service is based on the Tivoli Access Manager for e-Business product, which is maintained at VeriSign data centers. The customer must install a special proxy server behind the corporate Web portal to enable communication for authentication purposes with the service. Companies also have to be willing to share details of their security policies with VeriSign.

The service will be priced per-user and cost from a few dollars to \$30 per year depending on the size of installation. Tivoli Access Manager software costs about \$20 per user.

IBM Tivoli competitor RSA Security is undecided about whether to offer a similar service, although it has noted some interest among carriers of late.

Meanwhile, RSA this week will announce the latest version of its ClearTrust authentication and access control server software. New in Version 5.0 is support for the single sign-on industry standard SAML 1.0 and embedded RSA BSAFE certificate authority server components. ClearTrust can't use any other vendor's certificate authority although it can authenticate certificates from other vendors. The software costs from \$10 to \$26 per user depending on the installation.

Tivoli: www.tivoli.com; VeriSign: www. verisign.com



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Security

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Even the U.S. military, which has spent millions of dollars to help develop secure versions of the three protocols, has yet to deploy them across its vast, global network infrastructure.

The Internet's .mil domain can't verify that a .mil name matches a particular IP address, leaving the agency open to hackers who would spoof one of its Web sites. Similarly, the routers at the edge of the Defense Department's networks can't authenticate traffic updates from routers on other backbone networks, creating the possibility of intentional misdirection of the agency's communications. A spokesman for the Defense Information Systems Agency says it will secure .mil "as soon as technically feasible."

The problem is that the fixes — known as IP Security, DNS Security and Secure BGP — are too complex and too expensive for ISPs and companies to deploy. The protocols require hardware and software upgrades to handle the assignment, management and processing of keys, signatures and certificates, as well as additional operator support.

Given today's economic climate, ISPs and domain name registries aren't willing to spend millions of dollars on upgrades when their corporate customers aren't demanding additional security measures. Because none of the Internet's infrastructure players has deployed the secure versions of these protocols, there's no market pressure to upgrade.

It's the classic chicken-and-egg dilemma, and the Bush administration's cybersecurity strategy offers only the possibility of additional federal research dollars in the fiscal 2004 budget. Even with stronger government support, experts say it will take two to five years to deploy these fixes across enough of the Internet infrastructure to eliminate much of the threat.

"There are some in government who say the people who designed the Internet protocols were idiots. Let's go back and redesign it all," says Steve Bellovin, a wellknown AT&T researcher and one of the directors of the Internet Engineering Task Force's (IETF) Security Area. "That's mostly a bad and dangerous approach to take."

Instead, Bellovin says the government needs to create market incentives for software vendors and ISPs to build security into their offerings. "What if vendors were liable financially for security problems? That would be an interesting question," he says.

Contributing to the Internet industry's donothing approach to secure protocols is because few hackers exploit holes in IP, DNS or BGP Instead, distributed denial of service (DoS) attacks have caused the most damage, and fixing these three protocols won't prevent distributed DoS attacks.

"Part of the problem is there hasn't been a major attack," says Richard Probst, vice president of product management at Nominum, which develops DNS software. "If somebody took out a bank or a large e-commerce site, that would get everyone's attention."

IPSec proves hard to deploy

IPSec is the most mature of the three security protocols and is used in some VPNs. However, IPSec remains too complex for most network managers, and IPSec products from different vendors don't work with each other.

For a novice to set up IPSec is "virtually impossible," says Mark Kosters, vice president of research at VeriSign Global Registry Services. "If you want widespread adoption, it needs to be trivial to set these things up."

Mockapetris, inventor of DNS and chief scientist at Nominum. From the standpoint of deploying the service, you have to increase disk space and memory on your DNS servers. It's two to five times the cost of the regular DNS service."

The IETF is working on two fixes to the DNS Security deployment challenge: Delegation Signer Resource Record and Opt In.Both fixes are supported in the latest version of Berkeley Internet Name Domain, the open source software that runs on most DNS servers.

Delegation Signer streamlines how parent domains hand out keys to child domains. For example, Delegation Signer makes it easier for a Web site like www.ibm.com to Even if the top-level domain operators migrate to DNS Security, one challenge for network managers is that few operating systems support the protocol. For example, Microsoft doesn't support DNS Security in Windows.

Secure BGP gains little support

Of the three protocols that need security fixes, BGP is the farthest behind. The IETF has not yet agreed to work on a proposal for Secure BGP that was developed by BBN for the U.S. military. However, the IETF recently created a Routing Protocol Security Requirements working group that might consider Secure BGP.

In the past, ISPs and their enterprise customers have accidentally sent out inaccurate BGP updates that caused traffic disruptions, but no malicious BGP attack has been reported.

Security experts worry about someone deliberately sending Internet traffic down the wrong path. "Somebody playing games on BGP could eavesdrop and hijack sessions rather than just drop sessions," Bellovin says.

Under BBN's Secure BGP proposal, Internet registries would allocate digital certificates to ISPs and corporations when they are assigned blocks of IP addresses. ISP and corporate BGP routers would use these digital certificates to authenticate each other for exchanges of routing updates.

Secure BGP can only work if the Internet registries and the largest ISPs adopt it, but none has yet.

"The ISPs are worried about uptime and traffic delays," says Karen Seo, program manager for Secure BGP at BBN. "Securitywise, all they want to know is how much is this going to cost me."

Seo estimates that each ISP would need to upgrade 250 to 300 routers to add memory for storing keys that are required by Secure BGP. But neither Cisco nor Juniper offers backbone routers that can support Secure BGP.

Security protocols lack support High cost, management headaches hamper deployment.

Protocol	Description	Status	Deployment
IP Security	Authenticates the sender and recipient, then uses encryption to encapsulate the communication to ensure confidentiality.	Standardized since 1995 but updated regularly.	Some ISPs and companies use it for VPNs, but it is very complex to manage.
DNS Security	Verifies that a domain name matches an IP address before accessing a Web site or sending an e-mail.	Standardized since 1997 but updated regularly.	Not deployed by any ISP or domain name registry because of high cost.
Secure BGP	Authenticates an edge router and its control over a block of IP addresses before accepting traffic updates from that router.	Under devel- opment since 1998 but not standardized yet.	Not supported by any Internet registries, router vendors or ISPs.

In particular, network managers have trouble configuring IP Security devices because they all use different words to describe various security policies.

"You can only manage an IP Security device with the management tool from the vendor of that IP Security device," Mundy says. "The only way you can configure in a consistent way all the devices on your network is if they're all from the same vendor."

To help fix this problem, the IETF's IP Security Policy working group is developing a consistent set of words to describe the policies that an IP-Sec device can enforce.

The IETF's IP Security working group also is developing a simpler key exchange technique to help reduce the complexity of IPSec devices.

Also on the horizon is IPv6, an overhaul of IP that mandates the use of IPSec. However, IPv6 is another Internet infrastructure upgrade that has not yet shown much market momentum.

DNS Security considered too costly

DNS Security is not yet deployed in the Internet's root servers or top-level domains. One of the big problems with it is that assigning and managing keys for each domain name causes a huge performance hit for top-level domain operators.

"DNS Security requires 10 times the bytes" for each transaction, says Paul authenticate all its domain names under the www.ibm.com umbrella.

Delegation Signer has widespread support within the IETF, and participants expect it to be finalized by year-end.

Opt In, a proposal from VeriSign, is more controversial. It lets domain name holders choose whether to adopt DNS Security. This gives operators of large domains a gradual approach for migrating name holders to DNS Security, and it limits the amount of new hardware and software they need to purchase up front.

DNS Security "is very robust. It's as though every door in New York City were unlocked, and we invented locks," Nominum's Probst says. "But the only way it works is to lock all the doors simultaneously, which is hard to do...For large domains like .com, .net or .uk, to lock any entry, they have to lock all entries. We have to get that fixed before they can deploy."

Opt In does not yet have the IETF's backing because it adds to the complexity of DNS resolution systems and it fails to secure all domain names, admits VeriSign's Kosters, one of the authors of the Opt In proposal.

"If Opt In is advanced, we will be ready in six months from the standard being ratified to move ahead with some sort of DNS Security service," Kosters says. He adds that if Opt In is not advanced, VeriSign has no plans to offer DNS Security.

Will secure protocols be enough?

Some experts say that even if ISPs and corporations deploy these three security protocols, the Internet's infrastructure will remain vulnerable to a bigger problem: software patches.

"I'm very much in favor of these efforts to improve the security of BGP, IP and DNS. But I don't think the problem is the protocols," Bellovin says.

"I can't think of any major security incident that was due to a design error in the protocols. Instead, it was bugs in implementation," he adds.



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- **VPNS M** NETWORKED STORAGE

■ Sun last week announced a storage system that brings high-end features for protecting data to the low end of its storage line. Sun will start shipping the **StorEdge 3300 Series** systems this month. The storage servers will fit under Sun's StorEdge 9900, 6900 and 3900 Series systems, and are designed to provide a data store for lowend and midrange servers. The Stor-Edge 3300 Series will start at slightly less than \$7,000 for a five-drive just a bunch of disks system. Higher-end features available on some models in the 3300 Series include Level 3 Network Equipment Building Systems compliance — related to how well the system can withstand disastersand configurations that include single to dual RAID controllers. www.sun.com

■ Prosoft Engineering last week updated two software packages for Mac OS X users - NetWare Client for Mac OS X-IP Edition and Data Rescue. NetWare Client for Mac OS X -IP Edition v1.0.3 lets Mac OS X users connect to a Novell IP-based network. A free demo is available for download, and pricing starts at \$149 per user. Data Rescue Data Recovery Utility 10.0.3 lets Mac OS X users recover hidden or missing files and folders from hard drives. The new version also supports Mac OS X to Jaguar. A free demo of Data Rescue is also available. With pricing starting at \$90.

www.prosofteng.com

■ StorageTek introduced its largest tape drive and disk subsystem last week for enterprise-size customers who have 24-hour-a-day operations. The T9940B tape drive, which has a capacity of 200G bytes, transfers compressed data at as much as 30M byte/sec. The box has SCSI, ESCON, FICON and 2G-bit Fibre Channel connectivity. Available this month, the 9940B is \$39,500 and the D280 starts at \$90,000 and includes SANtricity 8.3 software, the controller and 1 terabyte of capacity.

www.storagetek.com

Microsoft faces 64-bit question

New Datacenter release to offer improved performance over 32-bit version.

BY JOHN FONTANA

REDMOND, WASH. — Microsoft's first operating system designed for the corporate data center has garnered sparse acceptance since its release two years ago, but the software is on the verge of a performance upgrade that experts say could put it on the road to corporate recognition.

Early next year Microsoft plans to release Windows.Net Server 2003 Datacenter, a 64-bit operating system that will boast more addressable memory for highlevel transaction processing and up to 25% better performance compared with the 32-bit version.

The 32-bit version of Datacenter was intended to be Microsoft's answer to 64-bit Unix systems and mainframes in corporate data centers. It's sold as a hardware and software combination through OEMs, such as Hewlett-Packard, IBM, NEC or Unisys, which guarantee the stability of the package through rigorous testing and certification.

64-bit history

The first 64-bit operating system from Microsoft shipped in August 2001 — Windows Advanced Server, Limited Edition — but was intended more as a test environment and a placeholder for the delayed .Net Server.

"The 64-bit version will be a very solid step forward for them," says Tony lams, senior analyst with D.H. Brown Associates. "Until they have the full 64-bit stack — processor, operating system, applications — it will be a challenge for them to match Unix systems or the mainframe."

A 64-bit version of SQL Server will closely follow the .Net Datacenter server release.

However, the 64-bit operating system won't vault Microsoft into data center glory, observers say.

"This is a mindset shift from Microsoft's high-volume business model. The Microsoft ecosystem is not built for the low-volume business that is the data center. They will need three to four years to mature and recreate such things as the familiar Windows software library and add support," he says.

And on top of that, Microsoft must prove capabilities it has not had in the past and that took Unix years to develop before it was accepted in the data center.

"Microsoft has to prove it can play nice and that means the hardest nuts of computing have to be cracked, including interoperability with everything, reliability, performance, manageability down to individual cycles and high-level service-level agreements," says Dan Kusnetzky, vice president of system software with IDC.

Microsoft will start to address some of those issues with .Net Server 2003 Datacenter.

See Microsoft, page 18

Netezza aims to speed apps processing

BY DENI CONNOR

FRAMINGHAM, MASS. — Start-up Netezza, which gets its name from an Urdu word meaning "results," says its new multifunction appliance can get customers results 10 to 20 times faster than when they use a combination of separate server, storage and database systems.

The company's first product, the Netezza Performance Server 8000 Series machine, is designed to speed the handling of queries to enterprise resource planning and other I/O-intensive applications that customers can run on it.

"For business intelligence applications, such as data warehousing, companies normally run expensive Oracle databases on expensive Sun servers attached to expensive EMC gear," says Steve Duplessie, senior analyst for Enterprise Storage Group. "If you have a 25-terabyte system, the average query can take hours to run — this mocks the whole business intelligence concept of current, readily accessible, highly usable data. Netezza can take 90% of the query time out of the equation, for half the money."

Fast answers

The Netezza Performance Server 8000 Series appliance is designed to speed the processing of business intelligence queries. Features include:

- One to four standard 42U (73.5inch) high racks.
- Two Pentium III 900-MHz Xeon host processors.
- 4.5 to 18 terabytes of storage capacity.
- 114 to 450 individual silicon processors to enable streaming from storage.
- Web-based monitoring and management.

The system starts at \$622,000, whereas multiterabyte systems based on an EMC Symmetrix, Sun Fire 12K server and Oracle 9i database can cost more than \$1 million.

The Netezza server is powered by Intel Pentium III Xeon processors and relies on a database that is built on open source PostgreSQL.

It also includes specialized silicon processors that attach CPUs to disk drives and stream data off the disk faster than in traditional systems.

"We looked at some of Netezza's early performance numbers and didn't believe what we saw because they were such an order of magnitude faster than what we were able to produce on traditional platforms," says Bryan Kennedy, COO for Epsilon, a marketing services provider in Burlington, Mass., which is used to hosting multiterabyte database systems on products from companies such as Sun and

"But we saw 300% to 1,000% performance improvements on average using Netezza's server," he adds.

Netezza, which was founded in 2000. has collected more than \$28 million in venture funding from companies such as Battery Ventures, Matrix Partners and Charles River Ventures.

Netezza: www.netezza.com

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Enterprise PORTALS MESSAGING/GROUPWARE E-COMMERCE SECURITY NETWORK MANAGEMENT DIRECTORIES

Start-up tackles app-integration hassle

BY ANN BEDNARZ

LOS ANGELES — Instead of investing in a full-blown enterprise application-integration platform, start-up Metapa wants companies to consider its lighter-weight integration tools, unveiled last week.

Metapa's software is tailored to specific business problems. Its first two products are the M8 Analytics Router for compiling analytic data from myriad sources and the M12 Gateway Router for exchanging data with systems outside the firewall.

These products, which Metapa calls application data routers, automate dis-

tinct business processes, as opposed to EAI platforms that offer broader integration functionality. In Metapa's world, a company would tackle one problem — for example, integration of employee benefits systems across a global enterprise — rather than try to build wholesale enterprise resource planning interoperability with 1,000 business partners, says Dave Powell, Metapa's CEO.

The M8 and M12 are less complex than traditional integration platforms and can be deployed more quickly and for less money, Powell says. The data routers pull information from multiple databases, file systems and messaging platforms and pass it along to requesting systems inside

Middleman

and outside the company. Along the way, Metapa translates, transforms and secures the data, as required.

"We're not simply picking up data and moving it from Point A to Point B like an [extraction, transformation and loading] solution might," Powell says. "We can apply a whole raft of specific services and processes to the data."

The M8 Analytics Router can aggregate data from hundreds of internal and external sources. It extracts, transforms and cleanses the data, then feeds it into a third-party vendor's data warehouse or reporting application, which provides the client interface.

The M12 Gateway Router provides a

secure gateway for exchanging data across the firewall with a company's business partners. It handles authentication, access control, encryption, validation and, in a future release, virus scanning. It does so in a way that doesn't require companies to give anybody on the outside access to their internal systems, Powell says.

"Companies want to have a very controlled set of interfaces that they, over time, can open to more and more people," he says. "But they still want to have a buffer to create an airlock between the outside world and their internal environment."

Application integration remains a top priority for many companies. In separate surveys released recently by Goldman Sachs and Morgan Stanley, participants ranked application integration among their top three IT spending priorities.

But companywide EAI rollouts can cost millions of dollars, whereas Metapa sells its tailored integration applications at a starting price of \$75,000 for the software license. Additional maintenance and professional services costs run about equal to the price of the software

license, Powell says.

Future products might tackle file, event, transaction, and media routing, he says.

Metapa was founded in April 2000. In its first year, the start-up raised \$15 million in venture financing, led by SoundView Ventures and Impact Venture Partners.

Metapa: www.metapa.net

Takes

■ Microsoft and Apple last week began offering customers in North America who purchase new Macintosh systems a \$300 reduction on the price of Microsoft Office. From now to Jan. 7, 2003, customers who buy any new Mac will be eligible to purchase Microsoft Office v. X for Mac for \$200. Its regular price is \$500. Office Version X for Mac includes Word X, Excel X, PowerPoint X and Entourage X, an e-mail and calendaring program available only for the Mac. Customers will have to purchase Office at the same time they buy their Mac to receive the discount. www.apple.com

■ Inxight Software, which was spun off from Xerox PARC in 1997 to focus on content management and information retrieval, has introduced Smart Discovery 3.0, which combines technologies such as automatic categorization and the display of search results in a hierarchical view that previously had only been available separately. The product is almed at manag ing unstructured data such as Microsoft Office files, Web pages, e-mail messages, research reports and news feeds. Inxight also announced a \$22 million round of funding last week. Smart Discovery runs on Windows NT/2000 and Sun Solaris. Pricing is determined on a per-server basis and starts at about \$250,000.

Metapa's M12 Gateway Router sits on a server in the demilitarized zone, outside the firewall, sharing data among a company's internal and external systems. The M12 aggregates, validates, translates and secures the data. ERP/CRM Server Directory Server Server Directory Server

Another partner sends data to the M12

for transformation and distribution.

Mercury moves into IT service mgmt.

■ BY DENISE DUBIE

SUNNYVALE, CALIE — Mercury Interactive last week introduced software the company says gives network executives an easy way to view application performance data and relate it in real time to business services and end users.

Mercury launched the Optane suite and the first product in the suite, Topaz Business Availability software. The company says the software gives companies a way to track how well IT delivers services such as e-mail, CRM and enterprise resource planning applications. The software uses a Web interface to show network managers application performance and to correlate it with predefined service levels.

Topaz Business Availability software collects performance information across network elements, such as operating systems and servers, and compares that data with preset service levels and rules. The software also can show which business services and end users that a poorly performing application will affect. Mercury says the software will let network managers spot — and fix — performance degradations before end users or customers are affected.

Zeus Kerravala, vice president of enter-

prise infrastructure at The Yankee Group, says Mercury released its new software at a time when customers want to better relate their IT infrastructure to overall business performance. The new suite of IT service management software puts Mercury — best known for testing, tuning and Web site performance monitoring software — in competition with Smarts and Managed Objects, which sell software that relates and tracks technology metrics against service levels.

Kerravala says Managed Objects, which introduced this type of software in 1997

See Mercury, page 22

Bradner



10/7 02

he Sept. 28 edition of *The Wall Street* Journal included a 16-page telecommunications report on the state of the wireless world. It was full of all sorts of fantastic almost-here technology and advice on, as the subtitle put it, "How to get the most out of the wireless world." But, sad to say, the report missed what survey after survey says is the most important factor in people's view of tomorrow's networked society. And, even sadder, the omission was totally predictable.

The 15 stories, plus sidebars, in the sec-

Sadly predictable

tion covered a good chunk of the wireless world. The report included everything from the health effects of cell phones to wireless bar code replacements for cartons of soda to a blow-by-blow description of setting up a wireless LAN at home to Intel planning on adding miniradios to all sorts of future microprocessor chips. Some parts were quite silly, such as an account of an intrepid reporter trying to live for a week without a cell phone. But overall it was a very useful exploration of a wireless future, even if it missed one of the biggest issues along the path to that future.

On the technical side, the two most interesting stories were about Intel's "Radio Free Intel"plan to add miniradios to all the types of microprocessors it sells in the next seven years and about wireless bar code replacements. Technically, it's not an easy task to shrink more than a dozen individual components into a small section of a microprocessor. But if anyone has the expertise to pull it off, it's Intel. Those things that don't get Intel radioettes can be wireless-enabled with the next generation of bar code replacements, which will be unpowered radio reflectors. A radio scanner is used to get the miniature devices to respond with a code. These devices have been used for a while to tag pets and farm animals, but now are getting inexpensive enough to include in consumer products such as washing machines or cases of wine and maybe soon, clothing. This type of tracking can be extended to people with device such as a Global Positioning System-based kid-tracker bracelet featured in a story about new wireless gadgets.

But, in what is to be expected from the business sector, I couldn't find the word "privacy" anywhere. With these new miniradios and bar code chips in everything from your PDA to your underwear, an average person in the Journal's future would be walking around with a dozen or more wireless devices on their person — a walking wireless "track-me" sign. What could be better for someone looking to kidnap kids than to have them wear a bracelet that broadcasts where they are at all times?

It's appalling, but normal, that the mouthpiece of American business would forget about privacy. It's a frightening future the Journal paints by its omission.

Disclaimer: To some, Harvard is appalling, to some it's normal. For most of the world, it's in between. But the one being appalled above is me (and maybe you).

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Mercury

continued from page 21

might have been ahead of user demand. "[With this new software], Mercury is aligning IT and business objectives. Users seem to understand the need to make IT a strategic part of how they do business now," Kerravala says.

Several network management vendors, including IBM Tivoli, Hewlett-Packard and Micromuse, also sell software that shows customers how well applications perform and how they affect the business' bottom line.

Kerravala says corporate network executives need to find ways to cut costs and improve user productivity, and many management vendors are responding this year. But, he adds, "You can't just buy technology and hope it does some good. All of these products need to be implemented correctly."

Topaz Business Availability software runs on Windows NT/2000. Software agents are distributed throughout the network to collect performance and availability data from operating systems, network services, applications and end users. The server software also houses the rules engine, which includes predefined settings and fixes for specific problems.

The software works with Mercury's Topaz Application Management software, but it also can run stand-alone and use thirdparty tools to collect data. The software comes with rules and data models that network managers can accept, and users can customize rules to their specific networks. The application performance data can be viewed through a Web-based interface that lets network managers track specific application performance by customer, service, events or other metrics.

Topaz Business Availability is available now. Pricing starts at \$250,000. ■

Dirig looks to help manage Java apps

■ BY JAMES NICCOLAI

NASHUA, N.H. — Dirig Software last week released a management product designed to help businesses maintain the performance of online stores and other Webbased Java applications.

Called PathFinder, the product uses server agents to create a map of all the components that a Web application uses, such as Enterprise JavaBeans (EJB) and Java servlets. The software then figures out relationships between those components and the paths among them that transactions must take to be completed.

Graphical tools help customers make sense of that data and relate component malfunctions to specific applications. The tools look at the data as it relates to other parts of an infrastructure, including databases and Web servers, and can highlight component problems likely to have the greatest effect on an organization's business, according to Dave Wilby, vice president of product management at Dirig.

The goal of products such as PathFinder is to pinpoint the root cause of a transaction failure. The job becomes difficult when applications are modified or added and records aren't kept up to date about the components affected. New applications sometimes make use of EJBs that other applications already use.

"People don't keep track of how they put things together, so problems happen and no one knows what's going on," says Bill Gassman, a research director with Gartner. "At the same time, the [operations] people need to be able to go in and see what's going on. [Java 2 Platform Enterprise Edition] is quite transparent, so you can look inside the JavaBeans and look at the attributes."

"That's what Dirig is doing," he says. They're looking in the app server at the JavaBeans and saying, 'Who can you call? And who can call you? And what are all the possible things that can happen here?"

Dirig's mapping approach differs from those of competing vendors such as Hewlett-Packard, which has developed tools that use a tagging method to monitor applications.

"HP has an approach where you inject a tag into the datastream and it marks the different beans that it runs as it goes through," Gassman says. "That's another approach out there being trialed by customers."

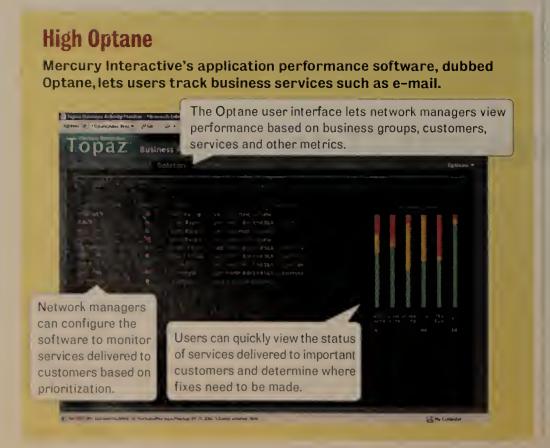
One downside to the mapping approach is that Dirig's customers intermittently must run a "discovery" process to build an up-todate map of their applications. This takes 25 to 30 minutes and can be done while applications remain online, Dirig's Wilby says. He acknowledges that performance can be affected while discovery is running.

On the other hand, Gassman says the tagging approach tends to require more involvement on the part of the developers.

The first version of PathFinder works only with Dirig's other performance management products. During the next year, the company plans to integrate PathFinder with third-party tools from BMC Software and IBM's Tivoli division, he adds.

PathFinder is available for IBM Web Sphere, Versions 3.5, 4.x and 5.x, and BEA Systems WebLogic, Versions 6.1 and 7.0. Dirig plans to offer a version for Microsoft's Net platform in the first half of next year, Wilby says. PathFinder costs \$10,000 to map six applications and \$10,000 more for the next 12 applications.

Niccolai is a correspondent with IDG News Service's San Francisco bureau.



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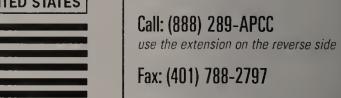
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Is biometrics ready to bust out?

BY ELLEN MESSMER

o single network security technology arouses passionate debate like biometrics, which relies on authenticating identities by matching a person's body parts, voice or signature to grant access to computer resources or restricted building areas.

Proponents say authentication based on aspects of an individual's body — such as fingerprint matching or iris scanning — offers far better security than any based on re-usable passwords or hardware tokens that generate one-time passwords. "We've been doing large-scale ID systems for 12 years for [the Department of Defense] and the Department of State, and biometrics is a very compelling technology," says Tim Corcoran, senior systems engineer at Northrup Grumman's IT division.

"Biometrics is not ready for prime time," says Stephen Elky, security auditor at Software Performance Systems in Arlington, Va., which tested biometrics products under government contract.

But critics point out that biometrics can be expensive and invasive, and that none of the hundreds of biometric products on the market is infallible in pattern-matching a scanned body part to a biometric image. "It's all snake oil," scoffs Jim Kirby, network engineer at Wells-Dairy, pointing to a widely publicized experiment in Japan earlier this year that showed people could fool fingerprint scanners by using molded "gummy fingers" made of gelatin.

Proponents of biometrics say it offers better security than passwords or hardware tokens while critics point to the technology's high cost and infallibility.

Biometrics believers

Despite the back and forth, biometrics continues to work its way into more environments.

A case in point is the U.S. government, which is poised to deploy biometrics on an unprecedented scale for improving security in the military, transportation industry and in border-crossing control. That could really give a boost to a market that has increased steadily, if not spectacularly — IDC analyst Charles Kolodgy says the market increased from \$77 million in 2000 to \$80 million last year and is expected to grow 15% to \$92 million this year.

Northrop Grumman, which has worked with the U.S. Air Force and other parts of the Defense Department to install iris and fingerprint scanners, expects to see the U.S. government install hundreds of thousands or even millions of biometric products in years to come. The rollouts will be fueled in large part by mandates from Congress through the U.S. Patriot Act and the Bush administration through its homeland security efforts.

Body by biometrics

Many different body parts are exploited by makers of biometrics tools for securing access to networks.

Iris: The colored ring of textured tissue that surrounds the pupil of the eye has a unique structure.

Retina: The layer of blood vessels in the back of the eye has a unique pattern.

Face: Facial images, or a collection of images, are captured by a video camera.

Fingerscanning: Minutiae of the finger image is captured via techniques known as optical, thermal or tactile.

Hand geometry: A 3D image of the hand measures the shape and length of fingers and knuckles.

Signature: Looks at the way we sign our names rather than the finished signature.

Voice: Measure the sound of the voice; useful in telephone-based applications.

The State Department, the U.S. Customs Service and the Immigration and Naturalization Service all are being asked to collect fingerprints of foreign visitors and transportation workers, among others, to authenticate identities through the use of biometrics. These new systems will need to work with the FBI's Automated Fingerprint Identification System, Corcoran says.

Another user is the University of Missouri's School of

Dentistry, which a year ago installed the SecuGen fingerprint scanner in 265 dental laboratory settings.

"Missouri law requires a signature from a practitioner to practice on a patient," says biomedical communications director Bill Marse. The dentistry school had moved to a system based on electronic records as part of a Year 2000 upgrade, and the school was interested in using biometrics for access to these electronic patient records and for a signature.

Student and faculty are now required to share a thumbprint, which is stored as a mathematical "hash" in a server on the university's Ethernet LAN so that it can be checked every time a student or faculty member accesses a patient's record. The fingerprint reader is built directly into the computer mouse.

Fingerprint scanning won out over retinal scanning, in part because at \$200 per device it cost two to five times less, Marse says.

Biometrics holds a lot of appeal to hospitals seeking to carefully follow the federal government's Health Insurance Portability and Accountability Act regulations, which require authenticating user access to records.

Rich Rauscher, manager of technology architecture at Moffitt Cancer Center in Tampa, Fla., this year started using BioNetrix Systems' authentication management software to support fingerprint readers on about 1,000 desktops, providing nurses and other staff with access to clinical records

Rauscher says he likes that BioNetrix also supports

cornea scanners, face recognition and voice recognition, in addition to password-based authentication, in the event the hospital decides to make use of those technologies.

Not perfect

Even biometrics backers acknowledge the technology isn't perfect.

"We've had a few glitches," the University of Missouri's Marse says. "If part of the system isn't up, it creates a problem of phenomenal scale for us." When that occurs, the university shifts to paper backup.

But in general, the biometrics-based system has worked well and the university plans to expand use to include handheld tablets, Marse says.

Another hospital, also using BioNetrix software, found fingerprint scanners to be ineffective for surgeons. They scrub their hands so thoroughly it makes it hard to read their fingerprints, says Gene

Gretzer, a senior analyst at St. Luke's Episcopal Health System in Houston.

WorldCom steered clear of fingerprint scanning because fingerprints are so closely associated with criminal suspect bookings at police stations that employees and customers would see such scanning as invasive, says Tim Burke, manager of infrastructure services. Rather, WorldCom uses hand scanners to ensure only authorized parties access its 14 data centers.

Security experts generally prefer fingerprint biometrics to face, eye or hand geometry, to get a pattern match. Facial recognition has only about an 85% success rate for matching, while fingerprints range close to 99% accuracy, says Richard Langley, an expert in identity technologies in TRW's public safety and transportation division.

Although a biometric fingerprint is unique, no person actually presses his finger the exact way twice onto a scanner. So software has to be designed carefully to prevent false rejections and false positives. That means biometrics often remains a highly customized application. It's often used in conjunction with passwords and smart cards as a back-up or double-check system.

The scalability of biometrics systems also is questioned. Even a supporter such as Northrop Grumman's Corcoran says "the reality is that performance is an issue" in large-scale rollouts.

James Wyman, director of the biometrics test lab at San Jose State University, which started doing testing back in the early days of the Clinton administration, adds: "A lot more research needs to be done on that."



More online!

Get the background on biometrics and links to key resources.

DocFinder: 2530

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Steve Taylor is president of Distributed **Networking Associates** publisher and Webtorials.com, a Web site dedicated exclusively to technology

tutorials in the broadband packet areas of frame relay, ATM and IP. Taylor also is a columnist for Network World and co-author of Network World's Area Networking" "Convergence" newsletters. Taylor can be reached at taylor@webtorials.com.

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Three questions with Charles Hoffman

Covad CEO sees brighter days ahead

While the stigma of bankruptcy — whatever remains of it these days — still hangs over Covad Communications, the competitive local exchange carrier is moving forward, debt-free. The company is in the midst of a

\$15 million ad campaign and has slashed prices on its DSL service to drive demand. Network World Senior Editor Denise Pappalardo recently spoke with Covad CEO Charles Hoffman about the company's progress.

You mentioned at a press conference recently that Govad is fighting a "perception" issue after coming out of bankruptcy. How are you trying to rebuild Govad in the eyes of its customers?

We have to keep proving that we are viable. Eighty-five percent of our business comes from the wholesale side of the market. About 10 of those carrier customers really matter. We explain our financials to those customers to prove we'll be around. We were just at AT&T talking to them about where we stand financially.

Because we were largely a wholesaler, we didn't have to rely on brand, with only about 15% of our business coming directly from consumers. We did a lot of stud-

ies and found that brand recognition is pretty low. So that's why we're getting out there with advertising. But it's tough because DSL in general wasn't that well perceived, and there are those that question how could we possibly compete with the incumbent local exchange carriers (ILEC).

How do you prove that you can compete with these guys after suffering a financial failure?

We have been able to win some big-name partners. Our biggest partners are Sprint, AOL, AT&T, SBC Communications — who is also a competitor — and Earth-Link, which is by far our largest customer. That's how we do it. If an ILEC executive says Covad doesn't matter, we say we matter to Sprint, AOL and AT&T.

The ILECs aren't good at working with the small mom-and-pop companies. If you look at businesses like Outback Steakhouse and Blockbuster Video, these are big businesses, but to the franchise owner it's a small business. We are really good at addressing the small-business users' needs, and we can offer that around the country.

Covad was classified as a competitive local exchange carrier (CLEC). How do you view that label, and how would you classify the company today?

I like the competitive part of the CLEC label. We are competitive and are going to be providing voice services by year-end. We will be rolling out voice service in the Bay Area in the fourth quarter and gradually roll it out to small businesses next year.

I like the name DLEC [DSL local exchange carrier] better, but the label doesn't really matter. I'll tell you what matters. A couple of weeks ago phone company CEOs had a chance to go to Washington D.C. to plead their case. We now have our chance to go and talk about the millions of customers that went with CLECs and why the government should not take that choice away from customers. The government needs to support competition in local markets. For that reason it is sometimes good to be lumped in with the CLECs.

Takes

■ **Qwest** last week refiled long-distance applications for nine of its local states with the Federal Communications Commission. Owest withdrew the applications last month after the FCC raised questions about accounting matters. Owest says it has created a new longdistance subsidiary in response to the FCC's concerns. The FCC has 90 days to decide whether to give Owest permission to offer long-distance services in nine states — Colorado, Idaho, Iowa, Montana, Nebraska, North Dakota, Utah, Washington and Wyoming. Under the Telecommunications Act of 1996, the regional Bell operating companies -Verizon, BellSouth, Owest and SBC Communications — must prove they are giving competitors access to their networks in states where the RBOCs are the dominant local service providers, before the RBOCs are allowed

to offer long-distance services in those states.

Sprint announced last week that **Len Lauer** is moving over to the company's wireless division as its president. Lauer takes over as former Sprint PCS president Charles Levine retires. Lauer most recently held the position of president of Sprint's Global Markets Group.

■ T-Mobile USA last week launched an all-in-one wireless phone and Internet device that lets users surf the Internet, send and receive e-mail, make phone calls, chat using AOL Instant Messenger, and more, the company said. Sidekick will run on 1-Mobile's Global Sys tem for Mobile Communications and General Packet Radio Service networks. The device has a 2.6-inch backlit monochrome screen, full HTML browser and a clickable scroll wheel. The monochrome screen swivels up to show a keyboard. In August, the company launched a wireless voiceenabled PDA.

Qwest touts VoiceXML

■ BY ANN BEDNARZ

Qwest has launched a development portal designed to help companies roll out voice-enabled applications easily and inexpensively.

Called Qwest Development Network, the portal supplies subscribing companies with development tools, technical support and access to network services required to design, test and launch applications with interactive voice response and speech-recognition features.

The portal is tied to Qwest Web Contact Center, a Web-based platform that routes and processes voice applications. By reserving voice ports on the Qwest gear, companies can avoid having to buy, deploy and maintain their own interactive voice response (IVR) hardware, says Alex Danyluk, senior director of Qwest Solutions.

Development Network is based on VoiceXML (VXML), an extension to the XML document-formatting standard that streamlines development of voice-driven applications for retrieving Web content.

VXML lets users navigate Web content via telephone commands. In the same way that customers use a Web browser to access data contained in corporate directories and databases, with a VXML-based voice application, callers can retrieve data from the same sources via spoken commands or keypad entries.

In the Qwest setup, the service provider takes responsibility for the heavy lifting. Qwest's infrastructure supports touch-tone detection and speech-recognition technologies from Nuance and Speechworks, and it integrates with advanced call routers such as Genesys and Cisco's ICM Computer Telephony Integration platforms. It acts as a middleman between customers and the company's Web server, translating a customer's spoken query into text, forwarding it to a corporate Web server, then converting the Web server's reply from text to speech for delivery over the telephone (see graphic, page 28).

What Qwest doesn't do is the VXML application design and development

See Qwest, page 23

NetworkWord

10/7/02

Service Providers

EYE ON THE **CARRIERS** Johna Till Johnson



t seems that 2003 finally might be the long-awaited year of voice over IP. According to a recent Meta Group survey 68% of large organizations are either deploying VoIP or plan to do so within the next two years. That's up from roughly 25% to 30% in previous surveys, and it marks a sea change in VoIP adoption.

But most early adopters aren't entirely happy with how their rollouts have gone. The problem isn't the technology — by and large it works as advertised. The real issues are people and process (starting to sound familiar?). Here's a handful of tips

Rules for a successful VoIP rollout

for ensuring that your rollout is as effective

Know why you're doing it. As simple as it sounds, this step is the one most often overlooked. Most companies have a vague sense that VolP saves money but couldn't tell you how or where. Unless you've got a specialized private-line network or a lot of small overseas offices, chances are, it won't.

What I call a "saved dollars" business case boils down to making a bet that the new technology will be less expensive to manage and support than the one it's replacing. With VolP, that's almost never true. So do yourself a favor and don't promise your boss lower costs — instead, look for ways in which your converged infrastructure might make employees more effective. Are you now able to deploy both voice and data to remote offices that previously had one or the other? Are converged applications making your employees more productive? Try to quantify those outcomes, rather than promising vague and unrealistic lowered costs.

Ensure your voice and data organizations are already converged. Voice and data folks have a lot to learn from one another — a fact that's readily acknowledged by the voice folks. On the other hand, data gurus tend to need a bit more coaching to recognize the specialized challenges of supporting a voice network.

Budget for technical training. To support your converged infrastructure, you need converged staffers. The fastest way to find these people is to grow your own. Typically this means taking your voice people and training them on data technologies. This is the fastest way to create people who are knowledgeable in both camps. The alternative — attempting to teach your data people about voice — is less effective, because of the lack of effective "voice schools" and the attitude challenges referred to above.

Budget for end-user training. Because a VolP implementation almost invariably changes the way the user's desktop is configured, take the time to teach your end users about the new systems. And also it's an excellent time to do some internal marketing — show off the new system's features to the user.

A final note: As of Oct. 1, I've started my own research firm, Nemertes Research, which specializes in the business applications of technology. IT executives who would like to participate in studies and receive copies of our reports — at no cost — should contact me.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

New Edge avoids market's wrath

■ BY DENISE PAPPALARDO

VANCOUVER, WASH. — New Edge Networks is emerging as an up-and-coming competitive service provider ... that isn't all that

The company was founded three years ago as a competitive local exchange carrier (CLEC) offering DSL services to small U.S. cities. New Edge quickly realized that its DSL-only strategy should be modified, a decision that has contributed to the company's subsequent success, says Kathie Hackler, a Gartner vice president.

"New Edge has held on because it is more interested in the application than the transport medium," Hackler says. The company's focus on business users, Tier 2 and Tier 3 markets and its diversified services, including T-1, frame relay, ATM and DSL are reasons why the company is still around, she says.

New Edge has attracted \$383 million in venture funding while only carrying \$35 million in debt.

The company is making efforts to take advantage of their struggling competitors by buying customers and networks. New Edge recently announced it is acquiring some Cable & Wireless data service customers. As many as 1,500 customers could move over to New Edge's network and bring with them \$45 million in revenue.

"These will be profitable customers for us," says New Edge CEO Dan Moffat. "The distinction [between New Edge and C&W] is that we have network facilities in the nonmetropolitan areas where customers are today?



The company acquired @Home Network's business division @Work in February for \$1.5 million, a deal that not only included 1,000 customers but also @Work points-of-presence in 33 cities.

New Edge has built a national ATM backbone that connects its local networks.

"We have access presence in 350 markets in 32 states with 600 carrier-class switches," Moffat says. "We serve everyone from a [small-office/home-office] user up through Fortune 50 users. Our opportunity is to offer better business broadband."

While the company buys transport services from several providers including AT&T, New Edge owns its own network equipment.

New Edge can keep expenses lower than competitors by selling its service primarily through agents and value-added resellers, Moffat says, noting that 85% of the company's sales are from wholesale deals. The company maintains a sales staff that is much

smaller than it would be if the company focused on direct sales.

While New Edge's competitors such as Covad Communications, NorthPoint Communications and Rhythms NetConnections also worked primarily with an indirect sales model, its approach differed enough to keep it afloat during the collapse of the DSL CLEC market. These competitors only offered DSL services to business and residential customers in larger cities, Hackler says. "New Edge, early on, decided to diversify."

Now Covad is the only one of the other three still standing, and it, too, has diversified its offerings to include T-1 service and soon voice services for businesses.



continued from page 27

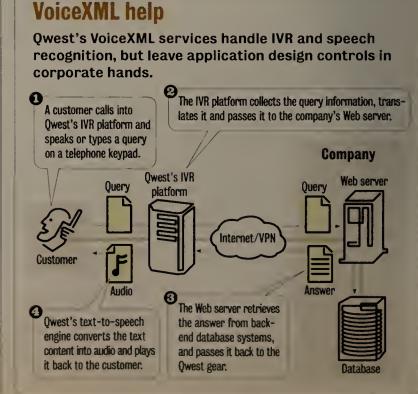
which is left to a company's staff. Danyluk says that separation makes sense. "We've disaggregated the application from the network solution," he says. "Many customers have feared giving their application up to a network service provider. VXML takes that fear away, because the company retains application control."

Customers develop their voice applications in a Web server environment, which means they can use the same tools they use to develop Web applications and the same tools they use to link Web applications to internal systems and databases, he says.

"A customer probably already has a Web tool that provides order confirmation information, for example, and interacts with back-end systems," Danyluk says. "So that customer can releverage the existing code — write an application once in a Web environment, and leverage it for both the Web and the IVR world."

The Qwest setup lets companies start small and pilot a voice application without much capital investment — just roughly \$200 for a development port, Danyluk says. As usage grows, companies can reserve more ports from Qwest, he says. Once a voice application is in production, port prices vary depending on the voice features supported.

The Qwest Development Network: www.qwccdevnet.com.





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Converging on a good idea

Cisco IP Communications System Solutions bring home the benefits of IP convergence, from improved mobility and productivity to impressive cost savings.

Imagine you are the sales manager at a large manufacturing firm, a job that requires you to be on the road at least two weeks out of every month. This morning, you flew to Boston, one of your company's 10 regional sites. Upon arrival, you find an office that is unoccupied for the day. You make it yours by pressing a few buttons on the Cisco IP phone to identify yourself.

Ten minutes later the phone rings. On the line is a regional sales manager from your company's Charlotte, N.C. location looking for your immediate OK on a proposal that a hot prospect seems ready to sign right now. The regional manager has no idea that you're in Boston, however; he dialed your main office number at the Chicago headquarters. You give him your OK on the proposal and tell him to keep you posted.

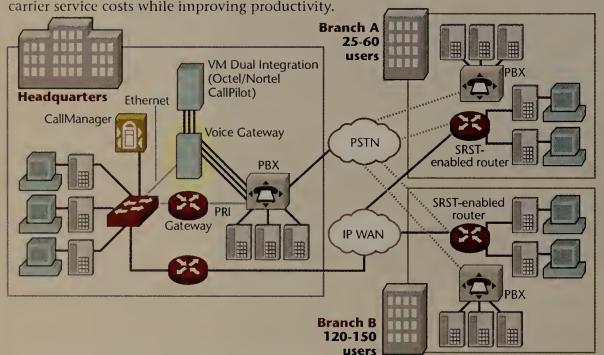
A few hours later you're in your hotel room. You fire up your laptop and use the hotel's broadband connection to log in to your corporate virtual private network (VPN). You launch the Cisco IP SoftPhone on the laptop and connect your headset or USB handset. While you're checking email, the SoftPhone rings. It's the Charlotte manager who needs to adjust his deal to get the prospect on

PBX world, moving an employee from one location to another requires manual database updates and costs an estimated \$75 to \$135. Because IP Phones all have a unique identifier – a MAC address – employees can move the IP Phone themselves, plug it in and it will sync up on its own with the Cisco CallManager. The Cisco Emergency Responder supports Enhanced 911 features, keeping an up-to-date account of the location of each user.

In addition to voice support, a converged IP network can support videoconferencing to users' desktops. While videoconferencing has been around for years, it required separate networks that made it too expensive for most users. Now the technology can realize its potential in cutting travel costs and enabling richer communication. Companies can also employ broadcast video for distance learning applications and to disseminate important company information.

Cisco covers the enterprise with IP

Cisco IP Communications System Solutions enable enterprises to create a converged network infrastructure that saves money in equipment, maintenance, administration and



board; again he needs your immediate approval. You tell him to make the deal. IP telephony, one of the Cisco IP Communications System Solutions, is taking this scenario out of the realm of imagination and making it reality. The ability to carry voice and video over an IP network provides organizations of all types with a level of mobility that offers not only convenience but real productivity gains. At the same time, the ability to converge voice and video onto existing data network infrastructures enables companies to save money in equipment, maintenance, administration and carrier service costs.

As the scenario above illustrates, a converged IP network built on Cisco solutions enables a user to become untethered from the physical phone that is the hallmark of the PBX world. When used with PC-based soft phones or IP phones from vendors including Cisco, users can log in to their corporate network from wherever an IP connection is available. The central Cisco CallManager server will immediately reset that location as the user's extension, and direct all calls there accordingly. There is no need to forward phones or leave an alternate number.

The same technology dramatically simplifies moves, adds and changes. In the

Positively a good return

Such features prove that IP convergence is no longer a technology of the future; customers are realizing its benefits today, not the least of which is a sig-

nificant cost savings. Initial ROI analyses by Cisco indicate IP convergence deployments achieve a positive return-on-investment 70 percent of the time, with an average payback time of 16 to 18 months.

That payback comes from a number of factors, including:

- Combining multiple network infrastructures into a single IP network. The City of Dallas, for example, expects to save \$21 million over 10 years by converging five incompatible data networks and its voice network into a single Cisco IP network.
- Centralized call processing, eliminating the need for key systems and PBXs at branch offices, thus vastly simplifying administration. Cray, Inc. increased staff productivity by 33% after deploying its converged network.
- Reduced number of wiring drops by 33% to 50%, a savings of \$200 to \$300 per user in new installations. H.B. Fuller reduced wiring costs by \$52,000 at one site alone.
- Lower bandwidth costs through the use of Internet and Ethernet technologies instead of expensive leased lines.

Built on AVVID

The Cisco Architecture for Voice, Video and Integrated Data (AVVID) is a blueprint for providing the end-to-end QoS required to ensure that applications including voice and video get the bandwidth they require throughout the IP network. AVVID is intrinsically linked with Cisco IOS software, employed on the entire line of Cisco gateways, routers and switches.

At the same time, Cisco Survivable Remote Site Telephony (SRST) provides access to critical call functions in the event of an IP network failure. SRST enables the routers or gateways at a given site to use the public switched telephone network for emergency backup and provides features such as call transfer, call hold and Enhanced 911.

SRST is just one way that Cisco recognizes the shift to IP telephony can be a gradual one. Another is the company's Evolve to IP program (www.cisco.com/go/evolve), which details how customers can make the move to a converged IP infrastructure while preserving their investment in existing PBXs and associated technology.

Once customers get a taste of the benefits convergence offers, however, it's likely that evolution will turn into more of a revolution.

This is the first of a six-part advertorial series on Cisco IP Communications System Solutions. Look for an IP communications customer profile in the October 28 issue.

Learn more about Cisco IP Communications System Solutions

Download the free Cisco "Straight Talk on IP Communications" pack, including independent evaluations, customer success stories and a financial justification white paper. Visit: www.nwfusion.com/gocv/adv1.



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Actelis says it has cure for fiber exhaustion

■ BY MICHAEL MARTIN

FREMONT, CALIF. — Actelis Networks last week announced the availability of a product designed to provide fiber-optic-like service over copper wires.

Actelis' MetaLoop "supermodem" — as the company describes it — enables multiple copper lines to support speeds ranging from 10M to 55M bit/sec at up to 12,000 to 18,000 feet, capabilities usually associated only with fiber. MetaLoop is intended to serve customers who don't have access to fiber.

MetaLoop is a patented spatial division multiplexing algorithm that Actelis introduced 17 months ago (see www.nwfusion .com, Docfinder: 2532).

Actelis also announced that incumbent local exchange carrier Cincinnati Bell, a wholly owned subsidiary of competitive telecom carrier Broadwing Communications, is using MetaLoop. Cincinnati Bell provides local services to customers in Ohio, Kentucky and Indiana.

Cincinnati Bell put MetaLight 1500 boxes into its network just more than a month ago

to serve two customers who wanted highspeed connections but didn't have access to fiber lines, says Dennis Hinkel, Cincinnati Bell's senior vice president of network and operations.

So far, Hinkel says, the technology has worked without any problems.

The carrier plans to use MetaLoop for two purposes: The first is as a permanent substitute for fiber lines in cases where it isn't economical to install a fiber line; the second is as an interim connection for customers who need to wait weeks or months to have fiber lines installed.

Not only does MetaLoop provide fiberlike speeds, says Tuvia Barley, Actelis' president and CEO, but it provides fiber-like reliability. Copper loops on their own aren't very reliable, Barlev says.

But because MetaLoop uses multiple copper loops — anywhere from eight to 48 — the failure of any one line won't bring the connection down. All it does is reduce the total bandwidth for the time the one loop is down, Barlev says.

Cincinnati Bell's Hinkel says the bit rate and throughput over a MetaLoop connection might not be as predictable as over copper — but the connections are

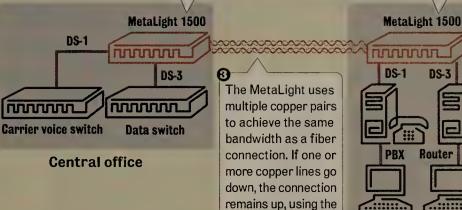
"If you're relying on eight pairs and one

DS-3 over copper

Using MetaLight, carriers can provision voice, video or data across one high-speed link.

The MetaLight 1500 supports both DS-3 and DS-1 interfaces, so it can be connected to a carrier's data network and the telephone network simultaneously.

Business users connect to the MetaLight box through either a DS-3 or DS-1 interface from a router, integrated access device or PBX.



remaining lines.

Workstations **Customer premises**

pair goes bad, you don't lose the connection," he says. "You just lose the bandwidth."

MetaLoop, which is based on G.SHDSL technology, can reach up to 18,000 feet from a carrier central office, which makes it

applicable to last-mile connections to enterprises, backhaul for cellular towers, or backhaul for DSL access multiplexers,

The rack-mountable MetaLight boxes that provide the MetaLoop service are four rack-units high (7 inches). The products are Network Equipment Building Standards 3- and Operations Systems Modifications for the Integration of Network Elements (OSMINE)-compliant, and are hardened for outdoor use.

OSMINE is Telcordia's certification that a product can be integrated into the operational support systems of major carriers.

Each MetaLight device has one DS-3 interface and four DS-1 interfaces. They are designed to be fully redundant with extra control and line card modules, fans and power.

The cost for two boxes will range from \$15,000 to \$30,000, Barley says.

David Passmore, a research director with Burton Group, says only about 10% of the business locations in the U.S. have access to fiber. Other companies, including Hatteras Networks, are going after the same market, he says.

But so far, Actelis appears to be the only company in the Ethernet-over-copper manket that has achieved T-3 rates, he says

Actelis was founded in 1998 and has raised \$77 million, which should last into 2004, Barlev says.



■ Conversent Communications, a

competitive local exchange carrier based in New England, last week announced that it will purchase \$35 million worth of Lucent gear over the next three years to expand its network throughout the Northeast. Conversent is a facilities-based carrier that provides voice, data, video and Internet access services to more than 30,000 business customers from Maine to New Jersey. Conversent's network includes the Lucent 5ESS Switch at its core, for routing local, less calls. The CLEC also uses Lucent's AnyMedia access system and Stinger DSL platforms to provision video, voice, frame relay and Internet services to customers. Conversent also will use Lucent's Metropolis DMX SONET/Ethernet access multiplexer and PacketStar multiservice med a gateways.

Riverstone revs up MPLS

BBY JIM DUFFY

SANTA CLARA — Riverstone Networks last week unveiled a series of Multi-protocol Label Switching enhancements to its metropolitan routers designed to provide carriers with more control in creating and delivering MPLS-based services.

The new features include transparent IP VPN support, enhanced network address translation (NAT), and MPLS quality-of-service (QoS) support.

Transparent IP VPN technology is designed to remove the costly and time-consuming process of configuring IPVPNs that traverse more than one carrier's network.lt is intended to alleviate the requirement for carriers to manually configure ports at the edge of their network, and the network they wish to cross, when extending an IP VPN beyond their own network.

Riverstone enhanced its routers' NAT support on a per-VPN routing and forwarding (VRF) basis. By enabling the translation of

local IP addresses to global IP addresses, carriers gain a new level of control over VRF traffic that needs to travel over the 'Net.

Riverstone says its MPLS QoS features are designed to enhance the delivery of Differentiated Services over IP VPNs. Using packet QoS information, carriers can map service requirements to an MPLS label to help ensure consistent QoS across networks.

Riverstone's routers support several MPLS features, including Layer 2 point-to-point and point-to-multipoint tunneling and Layer 3 IP VPNs. Riverstone says it has shipped more than 8,000 MPLS ports.

The MPLS enhancements will be available next month.



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10/7/02 TheEdge

www.nwfusion.com

Netrake unwraps its session controller

NCite handles network address translation, firewall traversal for IP voice calls.

BY TIM GREENE

ATLANTA — Netrake this week is unveiling gear designed to let service providers more easily deliver voice-over-IP services.

The 2-year-old company's nCite IP Session Controller hardware and software keeps track of complex IP phone call sessions as they cross firewalls. The product can translate private IP phone addresses so calls can be completed between sites and between companies that might use overlapping IP addressing schemes.

NCite is being demonstrated at the Voice on the Net conference this week in Atlanta where it will enable calls through a Cisco firewall. The company also will show how the device can gather call records needed to bill customers. Sending IP voice traffic through a firewall involves opening multiple ports for each call to accommodate whatever protocol is used — Session Initiation Protocol, H.323 or Media Gateway Control Protocol. Many firewalls cannot handle opening and closing these ports dynamically as calls start and end, so controllers are needed to handle this, says Christin Flynn, director of communications network infrastructure for The Yankee Group.

In addition, most companies use private IP addresses for their IP phones that cannot be routed on public networks without translating these addresses to public addresses. NCite handles firewall port management and network address translation to deal with these situations.

Flynn says that Netrake's hardware, which includes network processors of its own design, sets its gear apart from competitors in the potential to handle large numbers of phone calls. Netrake says a single chassis can handle 50,000 simultaneous calls using a G.729 coder/decoder. The number of calls depends on the codec used, the company says.

Netrake's software also recognizes patterns in IP traffic flows and uses these patterns to route packets quickly rather than relying solely on more time-consuming deep packet inspection, Flynn says. Netrake says its gear injects less than 5 microseconds of latency into a session. A phone call can tolerate up to 150 msec of delay before the conversation becomes unintelligible.

PROFILE: NETRAKE Location: Plano, Texas Founded: January 2000 Founder: Robert Maher, co-founder of chip maker Cyrix. Product: nCite IP Session Controller. Financing: \$22.5 million from Austin Ventures and Trinity Ventures. Fun fact: Company name

When carriers need to send IP calls between their networks and use different protocols, nCite can handle the protocol interworking.

comes from "Raking in

profits from the Internet."

The gear translates quality-of-service schemes between networks so a voice call gets preferential treatment as it crosses from one network to another, Netrake says.

Competitors include Acme Packet, Jasomi Networks, Kagoor Networks and NexTone Communications. The worldwide sales of session controllers this year will be \$10.4 million and is expected to grow to \$624 million by 2007, The Yankee Group says.

NCite is a 14-slot chassis that uses six slots for management, control and power blades. The other eight are available for I/O cards that include a two-port Gigabit Ethernet card that occupies four slots and a six-port Fast Ethernet card that takes up one slot.

The equipment is in beta testing and will be available in January.

■

Marconi switch adds life to aging carrier backbones

BY TIM GREENE

PITTSBURGH — Marconi last week rolled out a 10G bit/sec ATM card for its BXR 48000 multiservice switch router, enabling users to prolong the life of their current ATM core networks before

transitioning to IP/Multi-protocol Label Switching networks.

The new card, the OC-192c/STM-64 ATM module, lets users support higher speed ATM backbones now and leave open the option of migrating later to MPLS as the technology matures and users' budgets allow.

Marconi competes with other vendors of switches designed to provide a transition between older technologies, such as frame relay and ATM, and newer technologies such as packet-over-SONET and MPLS. Competitors include Alcatel, Cisco, Lucent and Nortel, according to Current Analysis.

Some companies, such as Lucent, say there is no market for OC-192c ATM or that it is too technologically challenging to support ATM segmentation and reassembly (SAR) at 10G bit/sec. Meanwhile, Cisco recently unveiled a new set of ASICs to perform SAR at OC-192c. Nortel says it plans eventually to support OC-192c ATM on its Passport switches sometime after shipping OC-192c packet over SONET.

The U.S. Naval Research Lab in Washington, D.C., which tests network and computing gear for the Department of Defense, has run the new card



Marconi's OC-192c for its BXR 48000 switch lets carriers boost ATM backbone speeds.

through its paces and says it considers it ready for deployment in the Defense Department's networks. The lab has had the card for testing twice, and it successfully carried five 1.6G bit/sec video streams multiplexed on a single OC-192c ATM port, says

Hank Dardy, Navy chief scientist at the lab's computational science center.

New ATM encryption devices also support OC-192c speeds, so this card could enable faster secure trunking in Defense Department networks, Dardy says. Encryption for IP is much slower, he says.

The card also will be attractive to service providers that have enough traffic to warrant faster trunking, but don't want to transition yet from ATM to MPLS.

"This gives them a longer runway. It buys them more time so their transition will be more graceful," says Joe McGarvey, a senior analyst with Current Analysis.

When the economy was better and carrier spending was projected to be higher, vendors thought MPLS conversions would be taking place faster than they are, McGarvey says.

He says the OC-192c card was developed for the Defense Department, and its delivery means the company can move on to developing other 10G bit/sec interfaces on its road map, including MPLS and packet over SONET.

The BXR 48000 card is scheduled to be available by year-end. Marconi declined to disclose pricing.

Nortel shutters tunable laser firm, costing 160 jobs

■ BY STEPHEN LAWSON

WILMINGTON, MASS. — Nortel is shutting down the optical components business, CoreTek, it acquired in March 2000.

The Boston division, which developed tunable lasers and other components for optical carrier networks, fell victim to the glut in carrier network capacity and the resulting slump in infrastructure building, says David Chamberlin, a spokesman for Nortel. As a result of the closure, Nortel will eliminate 160 jobs.

Nortel bought CoreTek shortly before the April 2000 technology stock crash in a deal worth up to \$1.43 billion in stock. The weakness of the IT and telecom industry since then has contributed to a string of losses and layoffs at Nortel.

Tunable lasers can save carriers money. In wavelength division multiplexing systems, a single fiber can carry multiple wavelengths of light, each modulated by its own data signal.

Tunable lasers are designed to reduce a high-cost requirement in systems that use fixed-wavelength lasers: Carriers need to have one replacement laser on hand for each one in active use. A tunable back-up laser can substitute for many different lasers.

CoreTek developed advanced lasers that could be tuned to many different frequencies.

Nortel used some CoreTek lasers in its own products and sold some to other equipment makers, but demand for big optical systems that require them was limited, Chamberlin says.

Nortel expects third quarter revenue to decline 15% from the second quarter, instead of the 10% sequential drop mentioned in previous reports. Nortel cited lack of spending by U.S. wireline and Asia wireless carriers for the slump.

Lawson is a correspondent with IDG News Service's San Francisco bureau.



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lechnolog **TECHNOLOGIES AND STANDARDS**

Graceful restart improves on BGP

New standard minimizes duration and impact of BGP router failure.

BY DAN GILL

Redundant network designs and hotswappable router hardware components have long helped improve network uptime. Now the Internet Engineering Task Force is leading a software-centric highavailability effort, which entails building extensions to existing routing protocols to mitigate the effect of software failures.

Extending the capabilities of the Border Gateway Protocol (BGP) is one of the first implementations of this initiative.

The Internet-Draft describing the protocol extensions to BGP is called "Graceful Restart Mechanism for BGP" (www.nw fusion.com, DocFinder: 2526). Using BGP graceful restart, the data-forwarding plane can continue to process and forward packets even if the control plane which is responsible for determining best paths — fails.

Graceful restart also reduces routing flaps, which stabilizes the network and reduces the consumption of controlplane resources.

BGP is an especially strong candidate for high-availability modifications. One

Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you have one and want to contribute it to a future issue, contact Features Editor Neal Weinberg (nweinberg@nww.com).

reason is that it has been designed to carry a large number of routes. Convergence after a BGP software failure, then, usually takes longer than with other routing protocols, resulting in an outage of greater duration. In addition, because BGP is typically deployed at the WAN edge - where corporate and service provider networks meet — the effect of a failed BGP process can propagate across multiple networks rather than being confined to one domain.

Software sits on peers

BGP graceful restart was developed to minimize the duration and reach of an outage associated with a failed BGP process. To do so, the software extensions must be deployed on the router restarting the BGP process and on that router's BGP peers. The peers help the BGP process regain lost forwarding information and also help isolate failures from the rest of the network.

The protocol modifications begin when the initial BGP connection is established. Both the restarting router and its peers indicate their understanding of the BGP graceful restart mechanism by exchanging a new BGP capability (BGP capability code 64) in the initial BGP open messages that establish the session.

The restarting router also provides to its peers a list of IP-based protocols for which it has the capability to maintain forwarding state across a BGP restart. This list could include such protocols as IPv4, IPv6, IP Multicast and Multi-protocol Label

When the router restarts its BGP

BGP graceful restart

The graceful restart mechanism lets the BGP router's dataforwarding plane continue to send packets even if the control plane (which determines the best path) falls.



- Initial BGP session is established between main router and peer router, and main router sends packets to peer router.
- 2 Control plane on main router fails, and main router begins restart process. Peer router does not wipe out all routes associated with main router, but continues to use those routes to
- Peer router collects updated routing information and forwards to main router, which is still in the process of restarting.
- When main router receives this information from all its peers, it begins selecting best paths again, based on this new routing information.

process, the TCP connection to the peer router might be cleared. Under normal circumstances, this would cause the peer router to clear all routes associated with the restarting router. This does not occur with BGP graceful restart, however. Instead, the peer router marks all routes as "stale," but continues to use them to forward packets based on the expectation

that the restarting router will re-establish the BGP session shortly. Likewise, the restarting router also continues forwarding packets in the interim.

When the restarting router opens the new BGP session, it will again send BGP capability 64 to its peers. But this time, flags will be set in the graceful restart capabilities exchange to let the peer router know that the BGP process has restarted.

Peer refreshes initial router

While continuing to forward packets, the peer router will refresh the restarting router with any relevant BGP routing information base (RIB) updates. The peer signals that it has finished sending the updates with an "End-of-RIB" (EOR) marker - an "empty" BGP update message. EOR markers help speed convergence because once the restarting router has received them from all peers, it knows it can begin best-path selection again using the new routing information. Similarly, the restarting router then sends any updates to its peer routers and uses the EOR marker to indicate the completion of the process.

Throughout this entire recovery procedure, user data packets have continued to flow between the BGP peers.

All the major routing vendors are in agreement on the IETF "Graceful Restart Mechanism for BGP" draft, and the two primary Internet backbone router suppliers currently are shipping code that supports the protocol extensions.

Gill is a technical marketing engineer in Cisco's Internet Technologies Division. He can be reached at dgill@cisco.com.

Ask Dr. Internet By Steve Blass

We were trying to change something on WinMX and we got a message, "You cannot switch to this setting because we did not find a UDP port." What is a UDP port?

A User Datagram Protocol port is an internetworking software abstraction, not a physical thing like a USB port. In Internetworking with TCP/IP, Douglas Comer explains, "We will imagine that each machine contains a set of abstract destination points called protocol ports. Each

protocol port is identified by a positive integer." The TCP/IP protocol suite uses these imagined destination endpoints to distinguish among multiple destination processes in a single host computer. Think of an office phone number extension. Connection-oriented services such as e-mail use TCP to establish reliable communication streams between hosts while other applications and services might use UDP to transport messages between systems. In either case the Source Port and Destination Port are part of the

network addressing used to establish the connection. IP receives datagrams and delivers them to the appropriate processing software based on the connection type and protocol port number. WinMX is just telling you that it is not being allowed to access a particular UDP port number for its connections.

Blass Is a network architect at Change@ Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE **NETWORK** MACHINE





n February we looked at a network power switch (see www.nwfusion.com, DocFinder: 2533) and were very impressed. This week we've got our hands on a similar device that not only controls power but also can switch its serial interface or telnet interface to one of six serial ports and be used to monitor a set of on/off switches such as door detectors.

This device is the FastNet Remote Monitor and Control Unit (RMCU) from E-COMMS, which comes in a sexy lime green, low-profile enclosure sporting a power-on indicator on the front and all sorts of connectors on the back: a 9-pin D-type RS232 console port; an RJ-45 10 Base-T, RJ-11 modem port with internal modem (with LEDs to show transmit and receive status); six RJ-45 ports for serial switching, eight pairs of connectors for switches (with LEDs for status); four 13amp power sockets; two power cords for each pair of power sockets; and a power cord for the main unit. Whew.

A sexy power switch that comes up short

We would prefer to have the LEDs on the front of the unit because once it's plugged in, all the cables will be at the back, and we can't get the full benefit of the light show in our server room.

The FastNet RMCU supports local (command line over a serial connection) or remote (telnet or Web interface over Ethernet or command line over a dial-up connection) access.

To configure the unit, connect via the serial port to use the command-line interface. We did this quite easily, but as we went through the setup of the FastNet's operating system, something called MicroRTOS from Xecom, kept interrupting with, "Cannot find [media access control] address of gateway," until we gave it the correct IP address of the gateway. That was really annoying, and why it should care is a mystery.

We also wished that the device supported static and dynamic IP addressing so it could use Dynamic Host Configuration Protocol on first boot up, and then if you wanted to, you could set a static address by telnetting or browsing in across your network. This struck us as a good idea because it took us forever to find our all-purpose serial cable.

The manual is poor and even has some incorrect instructions. For example, it says that when you are creating user accounts

I GEARHEAD SCORECARD **Product: FastNet Remote Monitor and** Control Unit Overall grade Functionality.....C EleganceD Value for moneyD Vendor: E-COMMS 5720 144th St. NW Gig Harbor, WA 98332

www.e-comms.com

with the command-line utility and you are asked for the "user operate level" you should specify a value of "1" for the admin level, "2" for operator level and "3" for user level. When you create users, the software offers you a default level of "5" and if you enter "1" it tells you that is not allowed and that the available range is "2" through "15"!

The company's Web site is no help — the site is pretty bad with 404s returned when we requested the FAQ and product documentation pages.

Anyway, the FastNet RMCU includes a Web server, telnet server and FTP server (the manual ignores that last service, even although the configuration process explicitly offers the option of switching it on). It also supports SNMP and has configurable traps so it can be integrated with network

management systems.

Once configured and the Web and telnet services enabled, you can use either to examine the status of the power sockets and switches, to switch power sockets on or off, and to select which serial ports are connected to the main serial port.

The latter lets you use the FastNet as a terminal server sending the console port data to any of six serial outputs. This is useful for devices such as routers that can be configured via their serial interface, but the FastNet's lack of Secure Sockets Layer support or any other type of encryption over IP makes it an incomplete solution.

The Web interface is OK but not particularly elegant. Device control and status reporting are available, and as an administrator you can set the name of the FastNet unit along with the names of serial ports, power sockets and contact switches and set passwords for each user level: admin, operator and read only.

For all its faults, the FastNet RMCU is a useful device, albeit with a few bad design decisions and some egregious documentation faults. But at a list price of \$1,245 the FastNet Remote Monitor and Control Unit is overpriced. The company says future versions will have major changes.

Switch on at gearhead@gibbs.com.



Quick takes on high-tech toys By Keith Shaw

D-Link ships USB 2.0 products

D-Link announced a full line of USB 2.0 connectivity products to connect desktops and notebooks to the higher-speed format. D-Link now has a 10/100M bit/sec Ethernet Adapter (\$70), a two-port PCl adapter (\$40), a five-port PCI adapter (\$60), a two-port Cardbus Adapter (\$40), a four-port hub (\$50) and a 15-foot USB 2.0 cable (\$30).

D-Link also announced its DFB-A5 Combination USB 2.0 and FireWire PCI adapter (\$90), a combination card for desktops that includes two external USB 2.0 ports, two external FireWire ports and one internal FireWire port.

All of the products are backward-compatible with USB 1.1, D-Link says. Go to www.dlink.com for more details.

Hitachi re-enters U.S. wireless phone market

Sprint PCS recently launched the new P300 PCS Phone by Hitachi, which marks Hitachi's re-entry into the U.S. wireless phone market. The P300, which costs \$300, runs on Sprint's PCS Vision network and includes features such as Java-based downloads and caller ID that lets you to identify whos calling you by customizing the colors of the Unking LED.

The phone, which weighs 3.6 ounces, has a battery life

of 3.5 hours of talk time and up to 10 days in standby mode, Sprint says. Other features include a color display that shows eight lines of text, a USB interface for PC connection, a built-in speakerphone and voice-activated dialing. Another caller ID function lets you link a photo to your contacts to display when that person calls.

For more information, go to www.sprintpcs.com or www.hitachi.com.

Netgear ships 802.11a/b wireless notebook card

Netgear recently launched its Dual Band PC Card (WAB501), an 802.11a/b dual-band wireless network PC card. The card will let notebook computer users connect to either an 802.11a (5GHz) or 802.11b (2.4GHz) wireless network. Netgear says the card will be compatible with 802.11g products once the standards are finalized.

The card is based on Atheros' wireless LAN chipset technology, the company says, and provides up to 11M bit/sec data rates for 802.11b,

and up to 54M bit/sec rates for 802.11a. It also can get up to 108M bit/sec rates in its 802.11a turbo (nonstandard) mode. It offers up to 152-bit Wired Equivalent Privacy encryption, Netgear says. The card costs \$180 a will be available this month. For more information, go to www.netgear.com.

FireWire Dino attacks cord clutter

your USB devices or FireWire devices are pretty boring looking. Until now.

Charismac Engineering has launched FireWire Dino, a "FireWire breathing dinosaur"

Hitachi's new Sprint

PCS phone includes

blinking light

customization.

that helps organize your FireWire cables and adds four 400M bit/sec data ports for FireWire devices.

The FireWire Dino needs no additional drivers and is buspowered; however, a power adapter is available for users who want additional power. It costs \$75 directly from Charismac's Web site (www.charismac.com). FireWire Dino is expected to ship early next month, Charismac says.

Veo announces \$200 network camera

The \$200 Veo Observer security camera lets you monitor locations remotely.

Veo has announced its Veo Observer network cameras will be available later this month for about \$200. The cameras, aimed at home and business security markets, let users see what's happening via any Web browser.

Veo says its cameras can capture audio and video clips, as well as digital snapshots. Live audio can be captured via internal or external microphones, the company says. Built-in tilt and pan control from remote locations features are included. Automatic e-mail alerts with attached snapshots can be enabled.

The cameras have an Ethernet port to attach to an existing network, and include software that

> allows for multiple camera viewing (up to four locations at one time on a split screen). The built-in Web server lets users access the cameras from any are an LCD IP address display, motion-sensor attachment, 24-bit color digital output, and a VGA CCD sensor for low-light sensitivity. For more information, go to www.veo.com.

> > Shaw can be reached at kshau@nww.com





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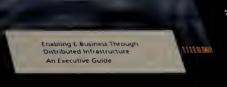
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EDITORIALJohn Dix

Bluetooth finding its way in

hen we reviewed Bluetooth developments last January the technology was showing promise because it was cropping up in things like cell phone headsets that let you place calls while driving, even if your cell phone was in your briefcase in the trunk.

These types of products weren't enough to guarantee the future of this 1M bit/sec point-to-point local wireless technology, but their arrival showed things were beginning to gel. Maybe Bluetooth wouldn't be rendered moot by other emerging wireless technologies after all.

Now there is new evidence that Bluetooth is here to stay. For one, it's being built into more traditional computing tools. Until recently, Bluetooth was something of a novelty, showing up in everything from camcorders to appliances (in April, Toshiba unveiled a washing machine, refrigerator and a microwave oven that were Bluetooth-enabled). Now IBM, for example, ships high-end models of its ThinkPad X30 laptop with 802.11b wireless Ethernet and Bluetooth built in.

And two, Microsoft and Apple have bought in. Apple has offered support in its new OS X operating system, and late last month Microsoft released software to allow Bluetooth devices to work with Windows XP-based PCs. What's more, the iSynch technology Apple released into beta two weeks ago uses Bluetooth to let customers with certain makes of Bluetooth-enabled GPRS cell phones wirelessly synchronize their phones with the address book and calendar on their computer.

And soon it won't matter that only 10% of the general public and 45% of early adopters/high-end consumers know what Bluetooth is (according to a report by Cahners In-Stat/MDR). People will just know they no longer need a cord to attach their mouse and their keyboard to their desktop, that they can dial in to the Internet from their laptop via the cell phone in their briefcase, and they can wirelessly exchange information with users of a range of devices through a few key strokes.

With Bluetooth showing up in basic infrastructure, new applications and capabilities will start to arrive, driving a wave of demand and acceptance.

As a sign of where this is all going, a study by Allied Business Intelligence predicts that by 2007, 20% of all new vehicles will arrive with embedded Bluetooth hardware. The technology will be used for everything from electronic toll collection to telephony and music systems, Allied says.

Once wavering on the brink of obscurity, Bluetooth now appears to be a viable network option fulfilling a real need.

— John Dix Editor in chief Jdix@nww.com

opinions!

Technologists against progress

Regarding Kevin Tolly's column "Technologists against progress" (www.nwfusion.com, DocFinder: 2524): I am a Cisco certified engineer, but I wouldn't say I'm reluctant to embrace technology. I would say my experience with these types of tools has been that they don't solve all the problems I have.

To make a comparison, why do most professional Web developers prefer to code in raw HTML instead of FrontPage or another HTML authoring tool? It's because they know the code and can get the job done quicker and leaner (thus saving money for development and bandwidth) than if they use one of the readily available tools to solve that problem.

The bigger concern is how the tool can help troubleshoot a problem. The bulk of the time spent connected to a device is not for the initial configuration, but stepping through each device along a troubled path, trying to isolate a problem. Because we tend to live in "the fire" and not the "frying pan," we need to jump onto a box, check some stats or the configuration and jump to the next box quickly. Maybe we're biased against the tools because we haven't found one that lets us select the commands quickly.

Whenever there is a leader of an industry, I've found that the majority of the time the competition tries to make their products as similar as possible. For technologists, we tend to stay in our comfort zone, reluctant to overcome another learning curve. So from an equipment vendor's perspective, whatever can be done to reduce that curve will save money for their customers.

Will Smith Plano, Texas

We understand that Kevin Tolly's prediction of our company's demise in his column "Technologists

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and oddress for verification.

against progress" was meant as a tongue-in-cheek remark. The greater irony is that a key part of our business philosophy is founded on a trend Tolly himself observed in an earlier column: the need for easier setup and maintenance of networks and network gear. This need has spurred us to create a line of products for visually managing Cisco routers and will lead to software products that more broadly address basic configuration and management problems encountered in multivendor network environments.

While it is true that many technologists have spent years learning how to configure Cisco devices using the command-line interface, it isn't their mastery of CLI that keeps them employed; it's the domain knowledge they bring to the job, their understanding of how to use the right network configuration to suit the needs of the business. Far from replacing these professionals, the tools Singlestep develops let them harness that domain knowledge and apply their skills more quickly and easily with powerful, yet visually simple, user-friendly, networking tools.

Singlestep enjoys strong customer adoption because we've actively sought the opinions of the technologists. Tolly mentions. Network engineers we work with want tools that help them more efficiently do their job: setting up the network, keeping it up and running despite vendor outages, modifying to fit changing business requirements. Today's network professional needs to accomplish all this and still meet the demands of continued growth of responsibility within a climate of flat and shrinking budgets.

Our vision is to let these professionals integrate their knowledge and experience with the information generated by their existing network devices and management systems. We intend to do this through a suite of applications that lets engineers visually configure and manage their network environment.

> Chris Noble CEO Singlestep Technologies Seattle



More online! www.nwfusion.com Find out what readers are saying about these and other topics. DocFinder: 2522







ON THE ROAD Sandra Gittlen

o you care whether your traffic rides over frame relay, ATM or something else? Qwest would argue that you don't. Last month at Network World's State of the WAN event in Richardson, Texas, Bob Schroe-

On the road with

der, senior director of IP product man-

agement at Owest, said that IT executives are more concerned about the delivery of their information than the pipe that carries it. (To register for the last leg of the tour, go to www.nwfusion.com, DocFinder: 2528.) He

argues that IT executives want to be able to pick and choose services from providers based on the type of traffic they'll send down the line.

In the future, you might be able to draw up a contract with your service provider based on multimedia services. Whether the provider throws that multimedia down a frame relay, IP or ATM pipe, or some combination of the three, will be irrelevant in your negotiations. Instead, you'll want to know what the guarantee is on the service, and you'll want reports telling how those packets were delivered.

Taking the pipes out of the picture will free up carriers to concentrate on building an infrastructure that supports exact data types. The carriers would be able to develop specific networks to handle voice over IP or streaming media. Others would be more tuned toward highvolume, less delay-sensitive traffic such as messaging.

Infrastructure as commodity

Schroeder says that IT executives don't want the hassle of figuring out if they should be on a frame or ATM network. He adds that they don't need this information to get traffic from Point A to Point B.

It was a contentious point for other panelists and attendees. Some argued that they don't want to give up control over which path their

> traffic will travel. They know and trust frame relay and want to know that that's the underlying network. Others said that not having to worry about the transport mechanism would let them focus on more important things, such as end-to-end security and quality of service (QoS)

I'm inclined to side with Qwest. I believe that as more data types are thrown down the chute and users expect a consistently high QoS, IT executives will have to give up some level of micromanagement in

Schroeder was not alone in arguing that WAN infrastructure will soon become a commodity and that carriers and service providers will have to rely on the various levels of service they can guarantee to

Do you trust the carriers to pick the right pipe for your data? Let me know your thoughts.

Gittlen is events editor for Network World's Seminars and Events Group. She can be reached at sgittlen@nww.com.

IT executives will have to give up some level of micromanagement in the network.



TELECOM CATALYST

Daniel Briere and Russ McGuire

t's no secret that the service providers are having problems. We've not seen the last

of the big bankruptcies. Most of their business customers are sitting it out, rechecking their own strategies in light of the telecom

mess and waiting for it to be resolved.

It's not going to get resolved without your help. We're not talking about a bailout or donations. Nor are we talking about buying stuff you don't need. We're talking about changing your habits.

The root of today's problem comes at the very core of what drives most businesses — Wall Street. According to conventional wisdom and a number of new reports, there's a glut of capacity in metropolitan markets and anyone investing in building fiber deeper into the local loop would have to be crazy. That's because the pundits analyzing telephone companies have declared that you have enough bandwidth to all of your business locations. There's no need for any additional investment by carriers for building out infrastructure to bring new high-bandwidth options to your doorstep. Too much bandwidth was built.

Obviously, the majority of users will disagree with this logic because fiber-based options reach a small percentage of business locations in the U.S. But, given Wall Street's iron rule over corporate spending practices, combined with the general shortage of capital, the investment community's belief that too much money has been spent building out capacity is likely to doom you to bandwidth shortages for years to come.

Does this scare you? It should.

For the past several years, corporate America has enjoyed the promise of more and more bandwidth at the same price. Although the cost of building out bandwidth has fallen dramatically service providers' pricing has fallen even faster in the hypercompetitive environment launched by the Telecommunications Act of 1996.

As is often the case, Wall Street has looked at the symptoms and jumped to a wrong diagnosis. The problem isn't that carriers and service providers spent too much money building out unneeded capac-

Crisis requires change of habit

ity. The problem is that these companies spent too much money and didn't collect enough revenue. Have you visited the headquarters of any of the start-up service providers that have raised a ton of money? Have you looked at their organizational charts and read their executive compensation plans in their annual reports? Go ahead, Wall Street, punish these companies for spending too much money. But don't tell us they've built too much capacity.

So how can you help — and what's this got to do with your habits?

We hope a few service providers will be brave enough to spend money to bring more bandwidth to your doorstep in the face of Wall Street's ignorant threats. But we also hope they will do so with a rational business plan. That means spending money only on the right things to ensure they can deliver a quality service to you.

It also means establishing rational pricing. That means user companies will have to change some of their ways, because the all-you-caneat, anytime-of-day approach won't make for profitable carriers — and certainly not in this competitive marketplace.

Are you willing to pay more for more capacity? If not, then you must be prepared to help the carriers smooth out their traffic requirements so they can operate more efficiently and therefore more profitably. Today's networks sit idle most of the time, waiting for that rare instant when you demand the full capacity you've been promised. Are you willing to mark packets carrying e-mail and other delay-sensitive information as low priority so your carrier has the opportunity to shift traffic slightly to achieve more optimal fill rates? Are you willing to pay a premium price for packets requiring premium service?

Times are a changin'. You're already seeing more usage-based pricing in the form of tiered pricing on cable modems and DSL lines. Expect to see application-based and priority-based pricing, too.

But for it to work, you have to make that step, too. We hope, this time, the economic disincentives will help you along that path.

Briere is CEO and McGuire is chief strategy officer of TeleChoice, a market strategy consultancy for the telecommunications industry. They can be reached at telecomcatalyst@telechoice.com.

We're not talking about a bailout or donations ... We're talking about changing your habits.

Disaster-recovery plans are now requiring real-time business continuity based on data centers in different locations.

BY ANN SILVERTHORN

The events of Sept. 11 forced companies without plans for real-time disaster recovery to create them in a hurry and forced companies with existing plans to prepare for disasters far beyond anything they had imagined.

Disaster scenarios of the past contemplated fiber cuts, power outages, accidental damage or even a natural disaster, like a flood or hurricane. But not even companies with the most sophisticated plans were prepared for "complete destruction of physical assets," according to Gartner analyst Donna Scott.

The typical Fortune 500 company's disaster-recovery plan might have involved sending back-up tapes to remote locations, or having duplicate data centers within the same campus, but only a small number had remote, duplicate data centers, adds Anne Skamarock, senior analyst at Enterprise

Management Associates and author of the Network World Storage Newsletter.

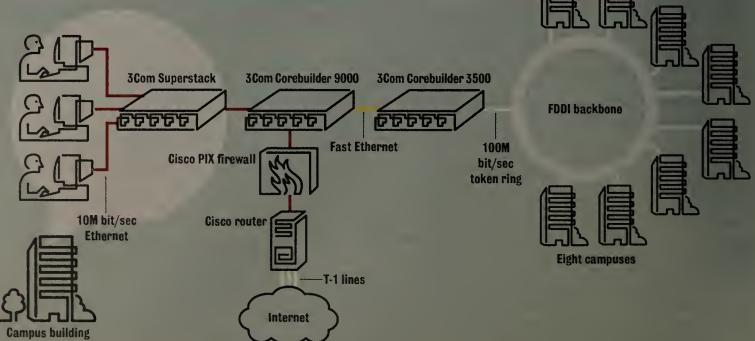
"Today, in the Fortune 500 many companies are moving toward duplicate data centers located several miles away from and running in lock step with the primary data center. This way. the time to business resumption in case of a disaster is significantly faster than an all-tape solution," she says.

After Hurricane Andrew hit the South 10 years ago, BellSouth implemented what it believed at the time was a solid disaster-

See Disaster, page 44

Page University's rate network (PageNE)

Pace University decided to take advantage of its existing FDDI backbone that connects eight different campuses to create multiple, redundant data centers.



- backbone via a 3Com Corebuilder 3500 single-mode fiber connection.
- Each location connects to the FDDI At the largest locations, the 3Com Corebuilder connects to a 3Com Corebuilder 9000 over Fast Ethernet.
- The Corebuilder 9000 aggregates traffic from within the location. Individual desktops connect at 10M bit/sec to 3Com Superstack switches, which then connect to the Corebuilder 9000 over fiber.
 - For Internet connections, the Corebuilder 9000 connects to a Cisco PIX firewall, then to T-1 Internet links.

NEW DB2. A SELF-STARTER IN THAT SELF-MANAGING,

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@business is the game. Play to win."

Disaster centinued from page 42

recovery plan.

Nonetheless, after Sept. 11, its corporate security council reviewed the effective ness of the company's plans and concluded that while BellSouth was prepared for natural disasters, it now had to focus on the potential for malicious attacks on the company's extensive infrastructure. BellSouth's network includes 1,700 voice switches, 800 data switches, 20,000 SONET rings, hundreds of terabytes of data and 4 million miles of fiber.

BellSouth decided to go with three data centers: two data centers designed to back up each other in real time, and a third standing by, just in case. And the company deployed application-level load balancing to ensure that mission-critical applications would remain up in the event an entire data center is destroyed.

"Since Sept. 11, BellSouth has gotten a lot more cautious about sharing specific location information, so suffice it to say the two data centers are several hundred miles apart," says CTO Bill Smith.

"All communications are based on an IP network, but we use Fibre Channel [storage-area networks) for storage. We also use that same capability to support our enterprise backup and recovery capability," says Rick Liddell, vice president of corporate technology. The data centers are linked via ATM over SONET rings.

Gredit union learns the hard way

Although BellSouth experienced some initial call blockages on Sept. 11, it was far enough removed from the tragedy that the effect on its network was not as profound as for companies closer to Ground Zero, such as Manhattan's Municipal Credit Union (MCU). The credit union serves 300,000 employees, and its headquarters, across the street from the World Trade Center, was devastated on Sept. 11.

It took several days to salvage critical data from hard-drive arrays and back-up tapes and bring the system back up at a Malvern, Pa., data center operated by MCU's software services vendor, Aftech.

The back-up tapes, which had been stored in an off-site, data protection facility in Connecticut were transported by car to CTO Barry Grant's home.

During those first few chaotic days after Sept. 11, MCU allowed customers to withdraw cash from its ATMs, even when account balances could not be verified.

Unfortunately, up to 4,000 people fraudulently withdrew about \$15 million.

About half of the money has been recovered, but Grant resolved to put a better system in place. "Prior to 9/11 we hadn't really considered a real-time disaster-recovery program — we thought it would be too costly for a company our size," Grant says. "Once you've been through a disaster, you realize that the costs of not implementing a disaster-recovery plan can be significantly greater than the cost of doing it."

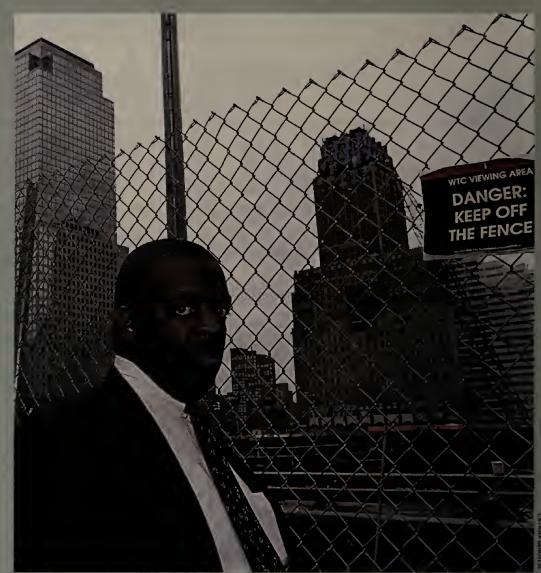
Working with Total Tec, a systems integrator, MCU implemented a real-time data back-up system. The initial phase backs up Open VMS applications, running on its AlphaServers. By year-end, Windows 2000 data will be added.

The present configuration includes two SAN Valley SL1000 IP-SAN gateway bridges and a StorageWorks EMA (Enterprise Modular Array) 12000 RAID system with 1 terabyte capacity. Two more Storage Works EMA 12000s will be added to back up MCU's Windows 2000 data, and the credit union then will back up 1.5 terabytes daily.

With one SL1000 gateway at the primary location and the other at a back-up site in New Jersey, data is replicated over a 622M bit/sec private line from WorldCom. With HSG80 RAID controllers at either end, Hewlett-Packard Data Replication Manager firmware works in the background to mirror data in real time.

University keeps Pace

For Pace University, which has numerous locations in the New York area, restoring communications after Sept. 11 was far more crucial than recovering backed-up data. Pace's FDDI backbone was not affected, but with phone and Internet service knocked out, frantic parents were unable to contact their chil-



Barry Grant, of Manhattan's Municipal Credit Union, says: "Once you've been through a real disaster, you realize that the costs of not implementing a disaster-recovery plan can be significantly greater than the cost of doing it."

dren living in Pace dorms.

Frank Tramontano, Pace's CTO, quickly designed a way to get the university's communications up and running. He and his team worked with Xand, a Web hoster in nearby Hawthorne, N.Y.

"We moved our Web server out to Xand, created the phone line connection, and using TCP/IP and SMTP routing techniques, mail began to flow in and out of the university," he said.

Pace University's network includes 70 servers (25 to 30 of which are mission-critical) and 3,500 university-owned desktops. Before Sept. 11, Tramontano was charged with developing a disaster-recovery plan

for the university's main IT building, West Hall, on the Briarcliff, N.Y., campus. Originally, he considered outsourcing, but that would have been expensive. After Sept. 11, the disaster-recovery plan became a necessity, and it occurred to Tramontano that Pace University's multisite campus held an advantage.

"We discovered that we have the luxury of building a hot site in one of our other locations without having to go to an outside vendor. We can replicate the most critical pieces of equipment for Pace to conduct business, and we can synchronize them, so we're ready to go in case of disaster," he says. "Now instead of looking at several days downtime, I can automatically fail over."

Tramontano says the equipment for the hot site has been purchased, and software is being tested. By November, he should have a handful of mission-critical servers in place, and he plans to use Computer Associates' BrightStor High-Availability software to synchronize servers between the two sites. Pace leases fiber-optic lines from Verizon to connect the campuses.

All three companies have recognized the need for multisite networks. Analyst Skamarock says, "A physically centralized computing and storage model makes a fairly easy target. One hit and it's out. Both metro and remote business continuity/disaster-recovery practices can prevent this."

Silverthorn is a freelance writer in Erie, Pa. She can be reached at silverthorn@ adelphia.net.

Federal government is big spender in disaster recovery

I their disaster recovery investments since Sept. 11. Other than a big spike in consulting, Scott says there t track or type of disaster that occurs. Individual government agencies realized their disaster recovplans weren't as strong as they should be. Scott says the federal government now spends significantly

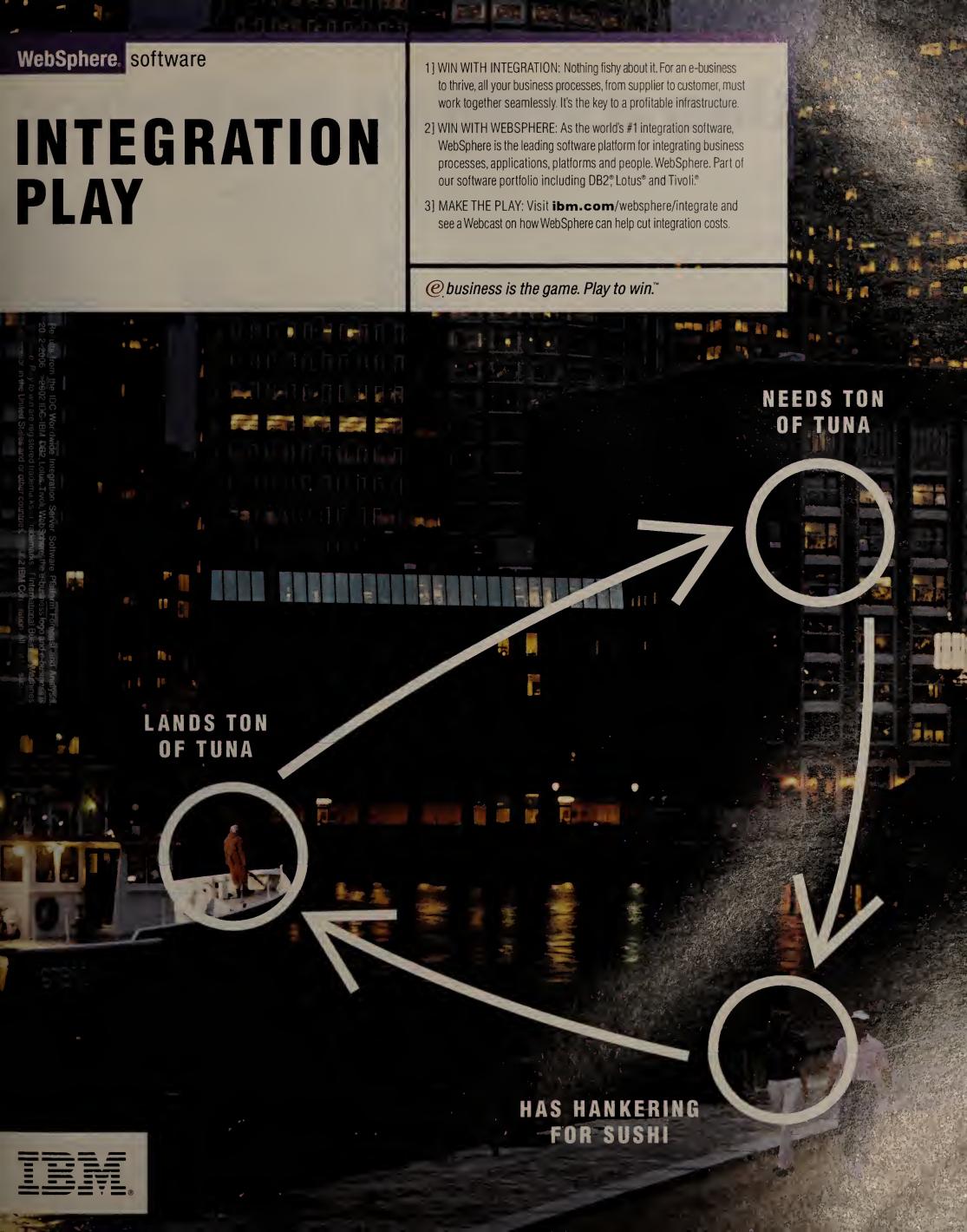
plans weren't as strong as they should be. Scott says this research aster recovery than other industries.

It a sting by financial services companies that found their crisis-management plans lacking on investment in making their plans stronger, because they had already done a pretty good job it see big expenditures on the technology side, but more on the people side," she says.

It ma where Scott sees significant activity in disaster recovery, mainly because of centralizations. Finally as part of the critical infrastructure prosequences by industries in disaster recovery planning.

— Ann Silverthori

- Ann Silverthorn



Lighting a Path to Resiliency

Cisco COMET portfolio provides an optical solution to demands for network reliability, flexibility and disaster recovery.

BY NOW enterprises have learned only too well that providing network resiliency is a business imperative, not a luxury. But questions remain in terms of how best to ensure that a company can recover from any type of disaster, and that employees have uninterrupted access to the services and applications they need to do their jobs.

The issue comes down to two words: protection and agility. Enterprises need to protect their networks from any single point of failure, while being agile enough to rapidly recover from a disruption and deploy applications wherever they are needed. While these are hardly new concepts, they have taken on new urgency.

That sense of urgency is leading some users to discover new ways to meet the demands for protection and agility. A prime example is optical network technology, as embodied in the Cisco Systems Complete Optical

Multi-service Edge and Transport (COMET) portfolio. Cisco COMET is a comprehensive product portfolio designed to integrate voice, video, data and storage applications over a single, end-to-end multiservice optical network. Cisco COMET enables enterprises to deploy highly fault tolerant networks that have the bandwidth and flexibility required to support applications such as data mirroring and backup, storage-area networks (SAN), network-attached storage (NAS) and voice over IP, which can be critical lynch-pins in a comprehensive disaster recovery plan.

"Every enterprise must develop plans and procedures to become a resilient organization," writes David Neil, editor in chief of the Enterprise Networking segment of Gartner, Inc.'s recent Spotlight series of reports on building resilient organizations. "Not having such a strategy places the enterprise at enormous risk and could leave it in a situation from which it may never recover."

Building in Resiliency

From an IT perspective, reducing the risk of a business-threatening event starts with designing a network that provides for high availability, with no single point of failure and rapid recovery times.

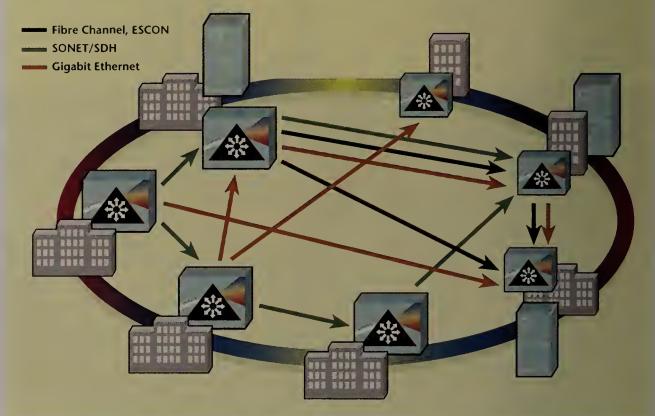
Guaranteed access to data is another must, one that is driving many enterprises to build SANs and NAS facilities. In either case, a geographically separate backup storage facility, if not an entire backup data center, is required.

This presents a challenge for many enterprises given the vast difference in bandwidth typically available in a LAN environment vs. a MAN or WAN. Enterprises can meet that challenge using optical technology, lighting up dark fiber or individual wavelengths to construct a metro IP network that provides the high bandwidth and network resiliency that applications like storage require.

"The CISCO COMET portfolio is designed to keep business operations functioning in the event of a failure, with the ability to recover from a fiber outage in less than 50 ms, "says Chris McGugan, senior manager, technology marketing for Cisco. "We ve spent time with companies like IBM and EMC in getting Cisco optical solutions certified for deployment with their storage"

A Resilient Enteprise Built on DWDM

The Cisco COMET portfolio includes DWDM solutions that enable network consolidation over a single multiservice, optical infrastructure that offers scalability, flexibility and resiliency.



systems, so that we meet their latency and distance requirements."

Cisco has also worked to ensure that all the benefits inherent in its Architecture for Voice, Video and Integrated Data (AVVID) extend to Cisco COMET. AVVID is a framework for leveraging the intelligent network features inherent in the Cisco IOS and Catalyst operating systems to provide security features such as authorization, authentication and accounting. AVVID also addresses performance issues, providing load balancing and advanced quality of service (QoS) features. The net result is that every application—be it voice, data or video—gets the network performance it requires.

Now a customer sexisting Cisco enterprise networking solutions can tie in to an optical infrastructure, while maintaining all the security and performance monitoring features embodied in Cisco AVVID. So customers not only get massive amounts of bandwidth, they get bandwidth that is application-aware.

Cisco COMET delivers on the well-known fault-detection and traffic rerouting capabilities of SONET, but goes a step further by providing support for the emerging Resilient Packet Ring (RPR) standard, which is based on Dynamic Packet Transport technology developed by Cisco. Both SONET and RPR networks can route around failures in less than 50 ms, but RPR offers more flexibility and a lower entry cost, McGugan says. Instead of installing a SONET multiplexer at each location, enterprises can terminate an RPR connection directly into their Cisco COMET devices or other Cisco equipment such as the Catalyst 6500 and Cisco 7600 Series router. RPR offers another advantage in that it doesn t require users to reserve extra bandwidth to be employed in case of a failure of the primary path, as does SONET.

Cisco COMET devices also perform extensive performance monitoring, such as by checking bit error rates and detecting Cyclical Redundancy Checking (CRC) errors that indicate signal degradation. That enables the devices to automatically switch traffic to a backup path when the primary is not performing properly.

In short, enterprises are finding that converging their voice, video, data and storage networks over a single high-performance optical network can not only provide cost savings and simplified network management, it can be an important part of their business resilience strategy.

Learn more about optical networking:

Download the white paper, "Cisco COMET: Optical Networking Solutions for the Enterprise," from: www.nwfusion.com/gocc/brwp3.



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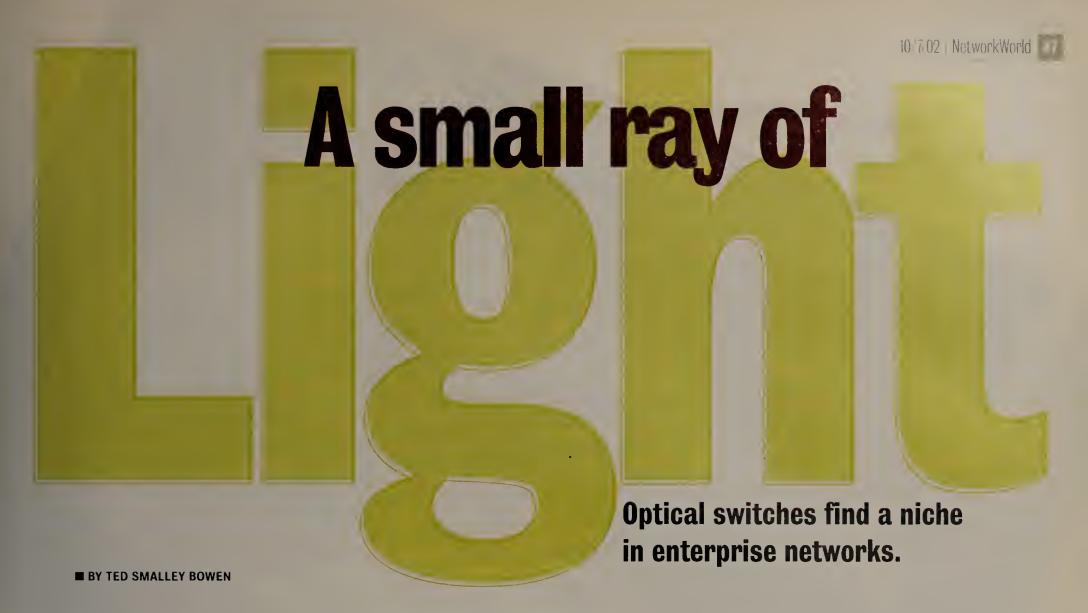
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Optical devices are making inroads into corporate networks as companies look to multiplex a single fiber link into high-speed channels for applications such as disaster recovery, storage-area networks and high-bandwidth campus interconnects.

Pure optical switches or photonic switches were designed to handle heavy-duty traffic in service provider core networks. And most analysts agree that these wavelength switches, with their terabit capacity and seven-figure price tags, are overkill for corporate networks.

But optical equipment vendors have less-expensive optical-electrical-optical (OEO) switches in their arsenal that do dense wave division multiplexing (DWDM) or coarse wave division multiplexing (CWDM). And with the service provider market in a slump, vendors are focusing their attention on the enterprise market.

Select companies, especially those with large, distributed networks that approximate a small telephone company, are looking to optical switches to extend their private networks, according to optical consultant Ben Peek.

Other companies and educational institutions are going with optical multiplexers to provide high-bandwidth interconnects between buildings and across the metropolitan area. Other requirements that can lead companies to optical interconnects are disaster-recovery plans tied to SANs and "incredibly large data sets to move around," particularly in CAD and video production environments, Peek says.

GMU opts for DWDM

George Mason University in Virginia is using DWDM to help contain costs and provide adequate bandwidth for three campuses. The university recently outgrew the T-3 lines that connected the three sites and replaced them with leased fiber for about the same price.

The university then purchased three Nortel Optera Metro 5200 DWDM switches, which split a

light beam into up to 32 protected channels at speeds up to 2.5G bit/sec.

"Putting in DWDM gear looked like an attractive way to get virtually unlimited bandwidth, while retaining our current costs. So we were looking at it as an investment in the future," says Randy Anderson, the school's director of network engineering and technology.

The university currently uses two Gigabit Ethernet channels for intercampus data traffic, an ATM OC-3 channel for videoconferencing, and there also are plans to put voice traffic on an ATM channel, he says.

The state-supported university, which receives an annual allocation for network hardware, spent a total of \$260,000 for the three optical devices.

"We have greatly improved response times to central applications, decreased time required for remote backups, and improved videoconferencing reliability and performance," he says.

Pinnacle West, an energy company in Phoenix, also is using DWDM for a bandwidth boost. The company recently bought three Cisco ONS DWDM boxes, according to senior infrastructure engineer Mario Gomez. "We're using an [Enterprise Systems Connector] channel interface to the mainframe, and running Gigabit Ethernet between routers at different facilities," he says. "The idea was to extend mainframe connectivity. It was mainly for redundancy and business continuity through connection to a mirrored site."

Pinnacle also plans to increase its use of IP telephony and IP videoconferencing. Gomez says the DWDM switch provides virtually unlimited scalability. If bandwidth needs outstrip the existing capacity, "just buy another extension card and throw it in there. You go from one gig to 10 gigs," he says.

David Gross, an analyst with Communications Industry Researchers, says DWDM makes sense for customers with high-bandwidth demands. "At the enterprise level, think about why you have a switch or cross-connect in the first place. Ultimately, it's a multiplexing function."

Peek adds that corporate-level optical components offer the advantage of handling multiple line-rates and protocols, making it easier to adapt to changes and to isolate network segments.

Low-cost optical options

A lower-cost approach is to add an optical interface card onto a standard router.

Spring Independent School District in Houston is using Nortel Passport 8600 routing switches with fiber-optic interface cards at each of its 25 facilities. The buildings are linked by point-to-point Gigabit Ethernet connections, according to network engineer Chris Kent.

In addition to the data traffic generated by the district's 5,000 computers, Kent has added IP telephony, videoconferencing and video surveillance channels. The 8600 routing switches, with 64G- and 128G-bit/sec backplanes, average about \$30,000 to \$40,000, according to Kent.

For Kent's purposes, "optical switching would be wavelength division multiplexing," rather than wavelength switching. And the district is mapping out uses for DWDM and CWDM. CWDM offers bandwidth up to 2.5G bit/sec, while DWDM can scale up to 10G bit/sec.

Overall, CWDM is probably a better match for corporate needs than DWDM, Gross says. "You can buy an eight-channel box for around \$35,000 or \$40,000. And those prices have been dropping through the floor recently," he says. CWDM has a shorter reach than DWDM and fewer channels, "but for a lot of these enterprise applications, they're going between adjacent building," he says.

Bowen is a freelance writer in Massachasetts. He can be reached at thowen@trnmag.com



Vendor/Model

IBM eServer xSeries x440

Four-way DP \$30,000, eight-way MP

Processor typeIntel Xeon DP (2.4GHz, 512K byte L2 cache)
Intel Xeon MP (1.6GHz, 1M byte L2 cache)

Number of processors 4 Xeon DP, 8 Xeon MP

Total number of processors supported 4 DP, 8 MP

Memory configuration 4G bytes (8x512M byte DIMMs)

Number of RAM slots

16 per SMP Expansion Module, up to 32 per 4-U chassis with optional SMP expansion

Expansion slots present

(6) 64-bit hot-swap Active PCI-X 1.0 slots (2x133MHz, 2x100MHz, 2x66MHz)

Disk controller

Adaptec AIC-7899W/Wide Ultra 160 SCSI/dual channel integrated on I/O board.

Hard disk description

(2) 36G byte 15K RPM 1-inch drives

Number/description of hard disk bays

Two 1-inch slots

Network interface

Broadcom 5700 10/100/1000M bit/sec Ethernet interface onboard.

24X-10X CD-ROM Ultrabay 2000 (IBM notebook formfactor)

Serviceabillity features

Light Path Diagnostics information panel; tool-free chassis for easy access to all major subsystems; power supplies are front accessible without having to remove server from rack.

Availability features

Predictive Failure Analysis; Light Path Diagnostics; Software Rejuvenation; hotswap redundant power supplies; hot-swap redundant fans; hot-swap redundant hard drives; Active Memory with memory mirroring and Memory ProteXion; Active PCI-X.

Manageability features

Remote Supervisor Adapter; IBM Director.

Security features

Power-on and administrator passwords: unattended boot; selectable boot..

Bundled software

ServerGuide CD-ROM installation and configuration utilities; IBM Director.

Warranty

Limited warranty (one-year parts and labor, 24-7 onsite same day response).

NetworkWorld

IBM eServer xSeries x440

Raising the bar for server performance scalability.

■ BY JOHN BASS, NETWORK WORLD GLOBAL TEST ALLIANCE

IBM has truly thought "out of the box" with its new xSeries x440 server that began shipping in April. The company has taken server scalability and processor density to a new level with the ability to run eight processors in a 4-U (7 inches) rackmountable chassis and then connect two chassis together to create a 16-processor server. This ability to scale processors outside the chassis is a novel approach to increasing server horsepower. Because of its outstanding performance and wealth of features, we give the x440 a World Class Award.

Server description

The processors reside in a symmetric multiprocessing (SMP) expansion module that holds four Intel Xeon MP (multiprocessing) processors or two Intel Xeon DP (dual processing) processors. Two SMP expansion modules can be loaded into an x440 chassis to hold up to four Xeon DP or eight Xeon MP processors. The SMP expansion modules are common to the supported processors, so upgrading from Xeon DP to Xeon MP only requires swapping out the processors. Our x440 came with two SMP expansion modules with four 1.6-GHz Xeon MP processors in each module for a total of eight Xeon MP processors. IBM also shipped two additional SMP Expansion Modules with two 2.4-GHz Xeon DP processors each for a total of four Xeon DP processors. This four-way Xeon DP server configuration was announced Aug. 30.

Each SMP expansion module has 16 DIMM slots to house a maximum of 32G bytes using 2G-byte DIMMs. The 16 DIMM siots can be mirrored into two banks of eight slots. If a DIMM fails in the mirrored configuration, the standby memory bank will activate to reduce downtime. Hot-swap memory is not available on the x440, but is expected in a future release. The SMP expansion modules are not hot-swappable.

The x440 supports Windows 2000 Server, Advanced Server and Datacenter operating systems, along with SuSe and RedHat Linux distributions, and NetWare 6. Our x440 came loaded with Windows 2000 Advanced Server.

Performance

The x440s performance was outstanding. The Secure Sockets Layer transaction rate was impressive, and the processor scalability was nearly perfect.

In our tests of the two and four Xeon DP processors, we achieved 32 SSL transaction/sec with two processors, and 54 SSL transaction/sec with four processors. In the tests with two, four, six and eight Xeon MP processors, we achieved SSL rates of 16,35,50 and 70 transactions per second, respectively. The DP performance is slightly higher than the MP performance because the DP processors run at 2.4GHz and the MP processors run at 1.6GHz.

The x440 scales perfectly with each increase in processor horsepower. This is quite an achievement considering most multiprocessor machines we have tested only show an 80% increase in performance with a 100% increase in the number of processors.

Because of its abundance of features, the x440 gets another perfect score. Compute scalability is the most impressive of the x440 features. As well as being able to grow from two to 16 processors, each SMP expansion module has a built-in Level-4

memory cache that can hold 32M bytes of dual data rate memory to its pool of four processors. In a 16-way configuration with four SMP expansion modules, the Level-4 cache can scale up to 128M bytes. The idea behind the Level-4 cache is to reduce the contention for main memory bus by the processors and PCI-X slots.

The six 64-bit PCI-X slots in the x440 chassis also are impressive. PCI-X is the new improved PCI specification that allows higher performance through optimized PCI bus use and higher bus bandwidth. Each PCI-X slot is hot-swappable adding to the server's potential uptime.

The memory architecture is full of availability features. The x440 lets you correct multiple-bit memory errors through Chip-Kill technology, paritybased redundant memory called Memory ProteXion, and memory mirroring. Memory mirroring lets you install two banks of redundant memory on an SMP expansion module. If the Module detects memory errors in the active memory bank, it switches to the back up memory bank if memory error.

Net Results

IBM eServer xSeries x440

RATING

Company: IBM, (800) 426-7777, www.pc.ibm.com/us/eserver/ xseries/x440.html Cost: (as tested) four-way DP \$30,000, eightway MP \$74,832. Pros: Highly scalable, feature rich, easy to service. Cons: High entry price.

What's the score?	eServer xSeries x440 WORI D
Performance 40%	5 CLASS
Features 30%	5 CLACO
Manageability 20%	4
Scalability 10%	4
TOTAL SCORE	4.7

Individual category scores are based on a scale of 1 to 5. Percentages are the weight given each category in determining the total score.

Scoring Key: 5: Exceptional showing in this category. Defines the standard of excellence. 4: Very good showing. Although there may be room for improvement, this product was much better than the average. 3: Average showing in this category. Product was neither especially good nor exceptionally bad. 2: Below average. Lacked some features or lower performance than other products or than expected. 1: Consistently subpar, or lacking features being reviewed.

occur. This feature will allow the addition of hot-swap memory. Hot-swap memory is not currently available on the x440.

The x440 also can be partitioned into independent machines that can be clustered. The result would be a potential boost in uptime with a minimal effect on performance. Two x440s integrated into a 16-way configuration can be partitioned

into four independent four-way machines, two independent eight-way machines or one independent 16-way machine.

The BIOS can detect and disable faulty processors to reduce downtime. Because the processors are not hot-swappable, downtime is necessary to replace a faulty processor.

Serviceability

Working on the system was relatively easy but not perfect. The system fans, hard drives and power supplies can be replaced without opening the chassis cover or using tools. The cover opens easily, exposing the PCI-X slots and the topmost SMP expansion module. These expansion modules are easy to insert and remove.

The cables connecting the SMP expansion modules are a little cumbersome to use. You have to remember to take them out before removing an SMP expansion module, which isn't very intuitive. This could result in user-created hardware failures. The cables also are a little tricky to reinsert into the SMP expansion modules.

Memory is a breeze to remove and replace on the SMP expansion modules. The processors are a different story. The heat sinks are difficult to replace, and the processors are a little difficult to remove and replace from their sockets.

Manageability

The x440 comes shipped with IBM Director management software. This software provides hooks into the standard systems management platforms such as Computer Associate's Unicenter, Hewlett Pack-

More online!

- · How we did our tests.
- More descriptions of the server.
- Performance charts.

DocFinder: 2523

ard's OpenView and Tivoli Systems. Director also provides a way to manage hardware components for failure and analyze the x440's capacity. Director alerts the administrator in the event of a hardware failure or overutilization of a system resource.

The front of the server houses the Light Path Diagnostics panel to inform the administrator of any hardware failures. The Light Path Diagnostics track CPU, memory, fan, and power supply failures. Even though it is nice to have one location to summarize hardware failures, further tracking capabilities are needed to find individual failed components in the chassis.

The Remote Supervisor Adapter is a PCI card in a special slot on the system that provides remote console and text/graphics redirect, power on/off and system reset. It also monitors power status, temperature, hard drives, fans and power supplies. This card is up even if the x440 is powered down and is connected to a remote management terminal by serial connection or over the Internet by 10/100Base-T Ethernet.

Conclusion

The x440 is an impressive package of computing performance, scalability, availability and manageability. It should work well in large corporate environments where performance and protection is important. If you are considering server consolidation, this could be the server for you.

The entry price with two 2.4GHz Xeon DP processors is a bit pricey at \$20,500 definitely not for the faint of heart. This kind of commitment at the entry configuration requires some upfront work to decide if this is the server for you.

Bass, a senior technical staff member at CNL and co-author of Building Cisco Multilayer Switched Networks, designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu. Khurrarn Khan, Piyush Raju and Sangrarn Kadarn assisted with the testing.

convergence



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*Source: Network World 500 Study, 2002

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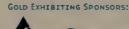
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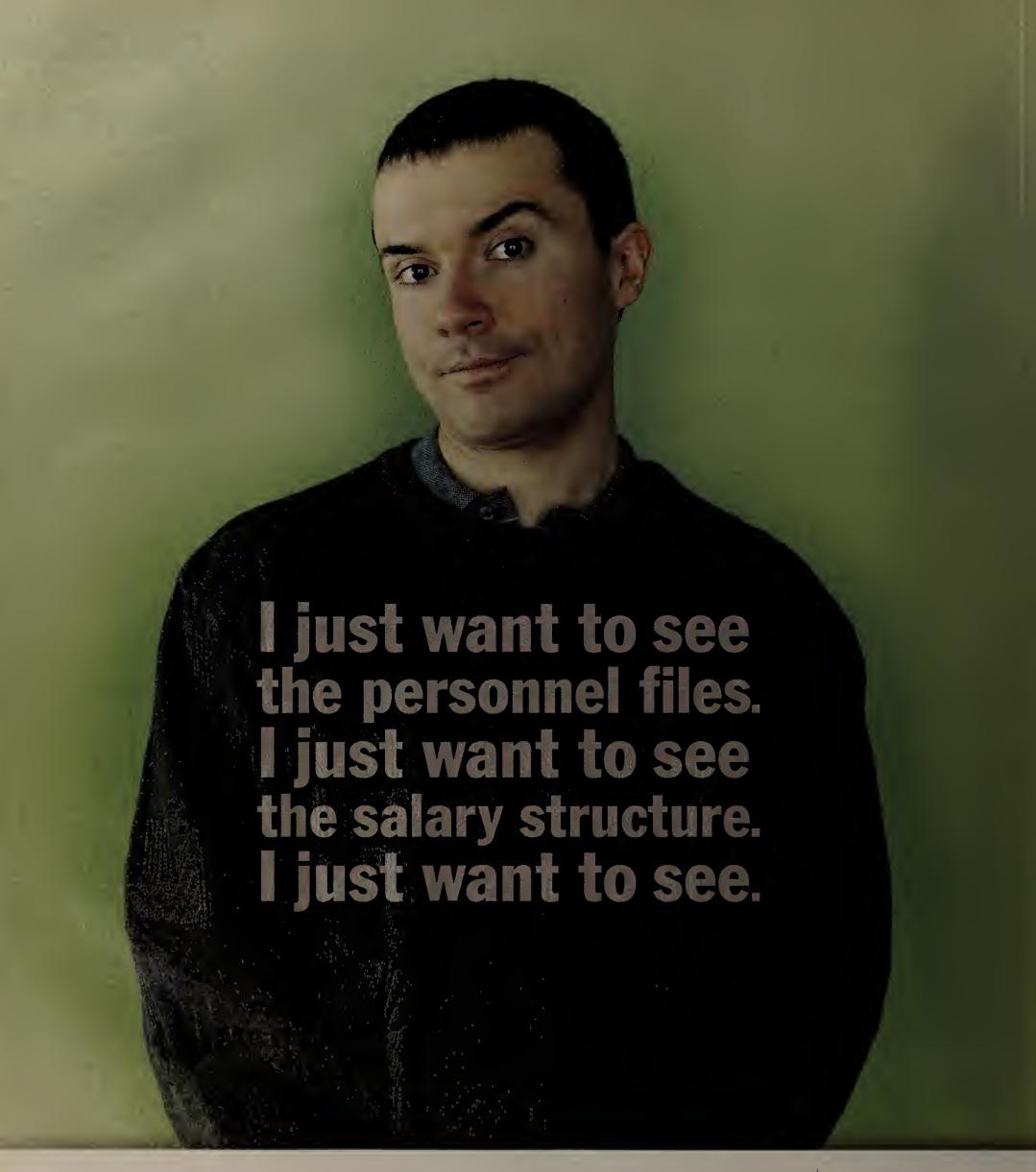




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Dell PowerConnect 3248

■ BY JOHN BASS, NETWORK WORLD GLOBAL TEST ALLIANCE

thernet switching technology has matured to the point where customers expect a pile of features and wire-speed performance. Normally, this combination translates into rising switch prices, but Dell has made an exception to that rule with its newest Ethernet switch.The PowerConnect 3248 is a lower-priced Layer 2 wiring closet switch and, while it does not perform routing, the 3248 does a great job implementing quality of service (QoS) and multicast optimization features.

Dell's box performed at wire speed for Layer 2 forwarding and QoS prioritization, had acceptable latencies for unicast and multicast, and is sold at just more than half the price per port of the typical Ethernet switch on the market.

The PowerConnect 3248 has 48 10/100Base-T Ethernet ports and two copper Gigabit Ethernet ports. The gigabit ports have Category 5 connectors and small formfactor pluggable (SFP) gigabit interface card connectors. Optional SFP adapters can be used in the SFP ports to provide 1000Base-LX and 1000Base-SX connections to the switch. To add redundancy to the 3248's power supply, an optional RPS-600 power supply unit can be purchased to add power to up to four 3248 switches. Features include support for standards-based link aggregation, virtual LANs, QoS, multicast optimization, and port mirroring.

We tested Layer 2 forwarding throughput and latency, multicast/unicast throughput, multicast latency, maximum number of multicast groups supported, VLAN bleedover and throughput, and QoS performance (see How we did it at www.nwfusion.com, DocFinder 2423).

The PowerConnect 3248 can forward packets at nearly wire speed, even when we mixed unicast and multicast traffic (see all performance charts, DocFinder 2424). There is a small dip in performance, with 64-byte packets passed at 99% wirespeed. The 3248 forwarded packets at wirespeed for all other packet sizes (128, 256, 512, 1,024, 1,280, and 1,518 bytes).

The 3248's QoS implementation can prioritize traffic properly at wire speed. The

3248 provides QoS by implementing 802.1p, IP Precedence and Differentiated Services Code Point (DSCP) protocols. The queuing scheme is implemented by four egress queues on each port, associated with one of four logical classes of service. Priority values from any of the three queuing protocols can be mapped to one of the classes of service. This falls in line with the industry's defacto standard for queuing implementations for Layer 2 forwarding. For 802.1p, DSCP and IP Precedence tests, we found that the flows were prioritized as they should have been.

VLAN implementation keeps traffic at wire speed. We ran a bleed-over test, which tracks whether packets from one VLAN shows up on the other VLAN. The test revealed that all VLAN traffic was forwarded to the proper destination.

Latencies for unicast and multicast seem a little high for a device of this type. We saw about 1.2 msec for 64-byte unicast packets and about 1.3 msec for 128-byte multicast packets. Even though this is higher than most switches we have tested, which register less than 1 millisecond latency, it should be acceptable for virtually all network applications. However, network design with too many hops using these switches could create noticeable end-to-end latencies.

The port-mirroring feature is a troubleshooting device that allows send and/or receive traffic of one port or multiple ports to be reproduced and sent out to another port. This mirrored port could have an attached network analyzer to capture packets to diagnose a problem. The feature works as advertised

Net Results

Dell PowerConnect 3248

Company: Dell, (800) 289-3355 Cost: \$1,500. Pros: Great price/ performance ratio; strong Layer 2 feature set. Cons: Lacks Layer 3 support, access control lists and centralized management platform.

What's the score?	Dell 3248
Performance 30%	4.5
Features 25%	4.0
Management 25%	4.0
Scalability 10%	4.0
Installation/Documentation 10%	5.0
TOTAL SCORE	4.25

Individual category scores are based on a scale of 1 to 5. Percentages are the weight given each category in determining the total score. ■ Scoring Key: 5: Exceptional showing in this category. Defines the standard of excellence. 4: Very good showing. Although there may be room for improvement, this product was much better than the average. 3: Average showing in this category. Product was neither especially good nor exceptionally bad. 2: Below average. Lacked some features or lower performance than other products or than expected. 1: Consistently subpar, or lacking features being reviewed. or lacking features being reviewed.

Strong management

Dell has done a good job creating a couple of simple, usable management interfaces for the unit, but it lacks a centralized interface to manage multiple 3248s. The 3248 can be managed in-band from one of the Ethernet ports or from a serial console port. The command-line interface (CLI) has a Cisco look and feel.

Dell also provides a Web management interface. This graphical user interface gives access to all configuration options available from the CLI. However, only one 3248 can be configured at a time via the Web interface. If a network professional could manage all 3248s from one interface, managing VLANs and QoS would be easier. Dell has implemented SNMP for enterprise management and monitoring, and Remote Authentication Dial-In User Service for authentication management.

Another interesting usability feature is the 3248's ability to hold two firmware images at once. This is useful for firmware upgrades because it would be easy to back up to an earlier version of firmware.

Overall, the 3248 is a strong Layer 2 Ethernet switch for small to midsize enterprise networks. While the addition of routing capabilities would make this switch an astounding value, the current price/performance/feature value makes this an easy

buying decision. At \$1,500, it's definitely worth a try.

Bass, a senior technical staff member at Centennial Networking Labs at North Carolina State University and co-author of McGraw Hill's Building Cisco Multilayer Switched Networks, designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu. Sangram Kadam, Khurram Khan and Piyush Raju assisted with the

Global Test Alliance

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Settling an argument on IP telephony features

TESTER'S CHOICE

By Michael Hommer

IP telephony while it promises to alter the way we use that hunk of plastic sitting on our desks, is still in search of its "killer app."

Consequently, changing perceptions about IP-based telephones as an adequate replacement for TDM-based systems has been slow going.

IP PBXs are here to stay because vendors are no longer committing significant re-

search and development dollars to TDM-based platforms. Moreover, there is growing anecdotal evidence of cost savings being realized through voice/data convergence, a big chunk of that coming from reductions in leased-line charges.

Since first testing voice-over-IP systems in 1997, Miercom has seen VoIP mature, overcoming voice quality and reliability problems. Still, some criticize IP-based voice systems from a feature perspective, saying they lack many compared with TDM-based systems.

Long-standing PBX powerhouses such as Alcatel, Avaya, NEC and Nortel itemize hundreds of features in their TDM systems. IP systems cannot make the same claims. The question is why should they? How many customers really need 450 features? Larger companies might require a larger set of features, but the small office-home office and small to midsize business market, which makes up more than 90% of all voice systems sold, probably doesn't.

End users need hold, transfer, voice mail, multiline, conference and forward functions. Attendants need station monitoring, blind and assisted transfers, paging and after-hours coverage. What else do users need?

While requirements depend — among many things — upon the customer, the industry, the size of the company and its style of business, Miercom thinks the overwhelming majority of companies can get by with the 50 or so features that most IP PBXs support. And when IP PBX vendors finally deliver some of the killer apps that will confer "gotta have it" status on IP-based systems (such as true Web and messaging server integration and follow-me, full-duplex speakerphones), customers won't miss unsupported legacy features, especially when phones are well-designed and intuitive.

Deploying a feature poorly is sometimes worse than not having it at all. Take call forwarding as an example. Users turn on call forwarding before they go on vacation, setting up calls to automatically transfer to an associate. When the user returns, does the IP PBX indicate that call forwarding is enabled on the phone, or will the user have to wait until noon before realizing that he has not received any calls because call forwarding had not been disabled?

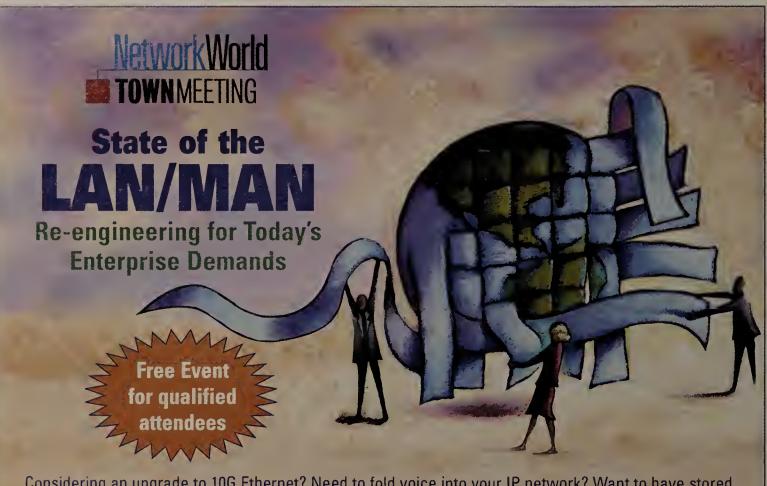
Rethinking how traditional features are accessed might be more important than supporting hundreds of them, many requiring feature access codes that no one can remember.

We'd like your opinion. We invite users and administrators to review Miercom's list of 40 "must have" features and comment on which you would include as standard VolP system features and which you'd omit. Miercom has posted this list on its Web site (www.miercom.com/survey).

What's in it for you? The pleasure of settling an argument.

We'll report what we found out in a future issue of *Network World*.

Hommer is consulting manager at Miercom, a network consultancy in Princeton Junction, N.J. Miercom is a member of the Network World Global Test Alliance. Hommer can be reached at mhommer@miercom.com.



Considering an upgrade to 10G Ethernet? Need to fold voice into your IP network? Want to have stored data at the ready? Hoping to untether parts of your network with wireless access? Before you delve too far into any of these areas, you need to take a long, hard look at your network and its capabilities. Attend Network World's FREE event "State of the LAN/MAN: Re-engineering for Today's Enterprise Demands" to find out how to create a network blueprint that gracefully addresses the needs of emerging technologies.

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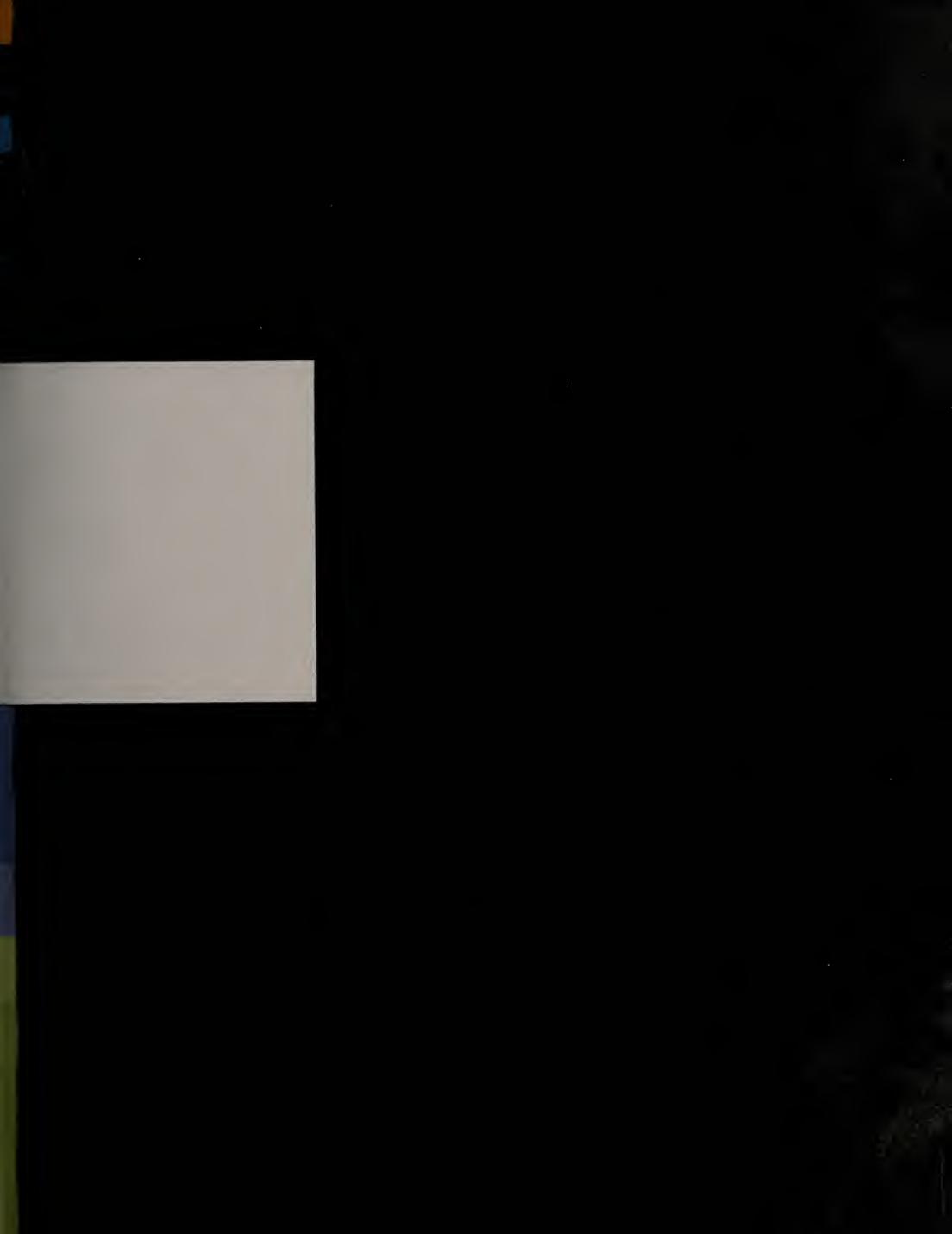








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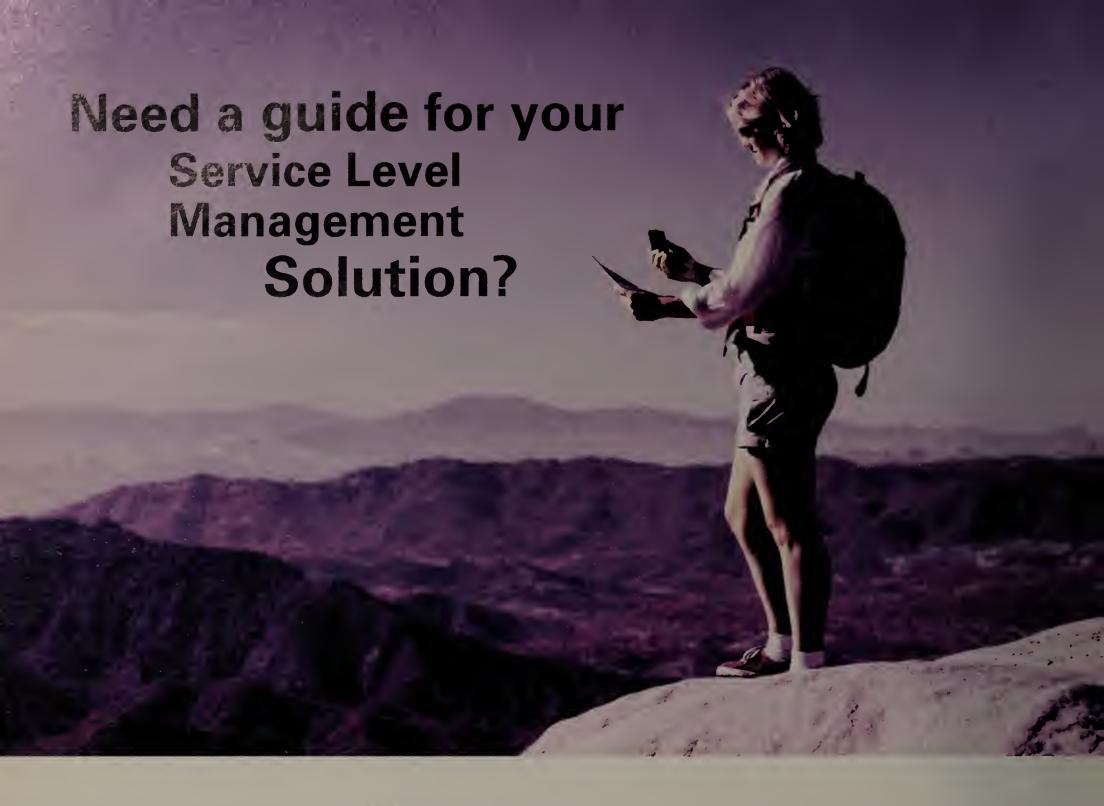








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Management Strategies Blessen

Help wanted: Uncle Sam is hiring

There's money in the federal budget for IT pros specializing in network infrastructure and security.

■ BY CAROLYN DUFFY MARSAN

Job-hunting network professionals should consider the federal IT marketplace, which experts say is teeming with opportunities for network architects, designers and engineers,.

While many of these jobs pay less than network professionals were offered during the dot-com and telecom boom of the late 1990s, federal employment offers a level of job security that few corporations can match given today's economic uncertainty.

The Bush administration also has launched several initiatives designed to raise salaries for midlevel and senior IT managers, speed the hiring process, improve on-the-job technical training and expand flexibility through telecommuting arrangements.

"It's such an exciting time to come to work for the federal government," says Laura Callahan, deputy ClO of the Department of Labor and co-chair of the Federal CIO Council's workforce committee. "There's an opportunity to provide service back to the nation and actually transform the way we do our work."

On Oct. 1, the federal government started a new fiscal year with plans to increase IT spending by 15.6% to a record \$52 billion. The Bush administration also has projected double-digit growth in IT spending in each of the next four years. Much of that funding will be invested in network infrastructures and applications required for high-priority electronic government and homeland security initiatives.

However, exact figures for how

much additional funding each federal agency will receive in the new fiscal year were not available at press time. Congress has not yet passed the annual appropriations bills, forcing the federal government to operate on stopgap measures that continue funding at

Government officials are reporting a shortage of IT leaders and technical staff. The Bureau of

last year's levels.

Labor Statistics predicts the federal government will need to hire 16,000 additional IT professionals during the next decade. Meanwhile, a recent National Academy of Public Administration (NAPA) report finds that more than half of the federal government's current 59,577 IT professionals are

eligible to retire within the decade.

"The federal government has gone through a lengthy period of downsizing," says Alan Balutis, executive director of the Federation Government Information Processing Councils.

"When this administration came in, the federal workforce was at the same level as when John Kennedy was president," he says. "That means we've had very little infusion of new talent and new skills across the board."

Within feder-

al IT shops, demand is strongest for network and security specialists.

"The opportunities for IT professionals in general, and network professionals specifically, are very great and very broad," Callahan says. "For us to operate in the new digital government we are forming, we have to have a way to communicate. We have to do so through our networks."

Callahan says network engineers that know how to install, maintain and configure firewalls are in demand, as are those with jobs, the Federal ClO Council held its first Web-based Virtual IT Job Fair in April. Using automated processes, the

experience in encryption, VPN and intru-

To attract more applicants for these

sion-detection software.

Federal CIO Council announced a few hundred jobs and received more than 18,000 applications. "The traditional process can take from

three to six months to announce a position, obtain a list of qualified candidates, do interviews and make a selection," Callahan says. "We were able to process those applitime position upon graduation. And the first class of students who received federal CyberCorps scholarships to study information security in exchange for a year of work in government will graduate next year.

"Overall, the basic compensation is probably not as good as many network professionals could get on the outside, but those jobs are fewer and far between," says Ray Bjorklund, vice president of consulting services at Federal Sources, a market research firm. "The total benefits package can be attractive...The government's got some

Federal IT workforce slated for growth

The U.S. government is looking to add network and security specialists.

Number of IT professionals in the federal government 75,577 59,577 2011 As of September 2001 Required by federal government

SOURCE: BUREAU OF LABOR STATISTICS

LLThe opportunities for IT professionals in general, and network professionals specifically, are great and very broad. 77

Laura Callahan

Deputy CIO for the Department of Labor and co-chair of the Federal CIO Council's workforce committee



More online!

Download a copy of the National Academy of Public Administration report on federal IT workforce issues.

DocFinder: 2521

cations in seven business days and then publish a list of qualified candidates to agencies to make selections."

Callahan says close to 200 people were hired as a result of the Virtual IT Job Fair. For example, the State Department placed IT specialists in less than six weeks. Another Virtual IT Job Fair is planned for the fall.

On the pay and benefits front, federal agencies are granting recruitment and retention bonuses to key employees, offering training for popular certifications from Cisco, Microsoft and others.

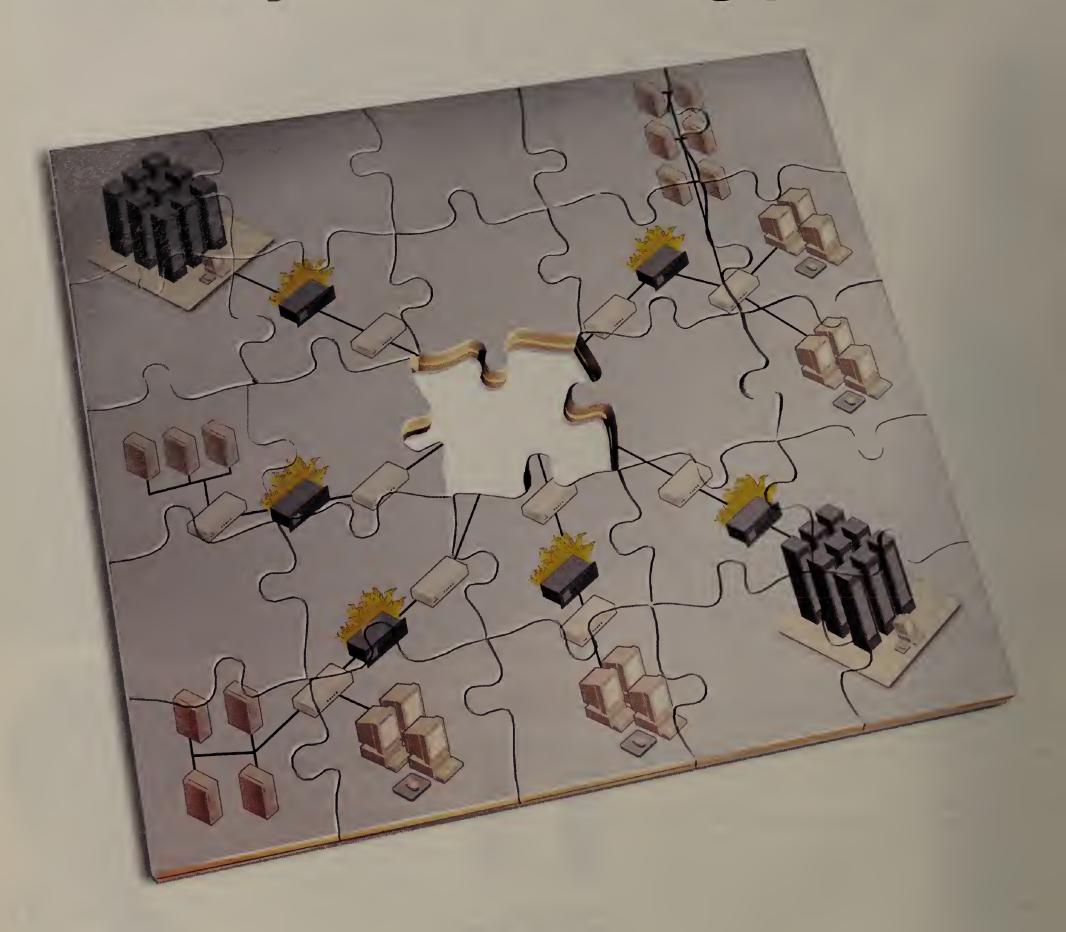
A new program lets college students work part-time with the promise of a fullpretty nice savings accounts that are comparable to 401(k)s."

Another advantage is that federal jobs often are less demanding than the 70- and 80-hour workweeks that the private sector expected during the Internet booin.

"There's something to be said for having time with your spouse and having a manageable schedule," Balutis says. "The government is into job sharing, telecommuting and alternative work schedules."

Editor's note: Next week, watch for a look at the opportunities for employment with federal government contractors.

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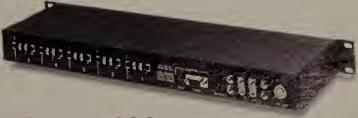
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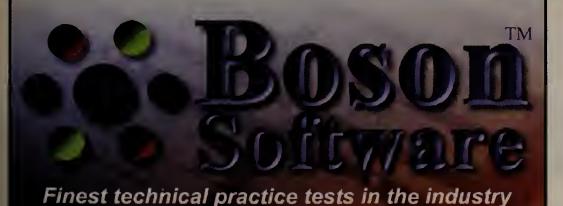
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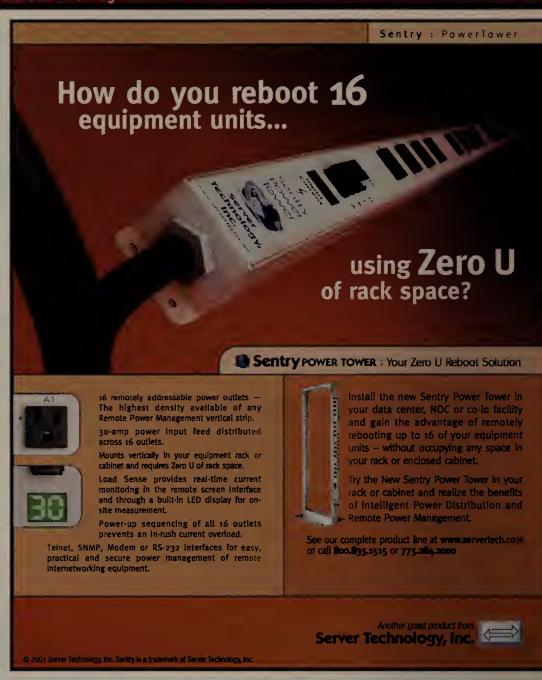
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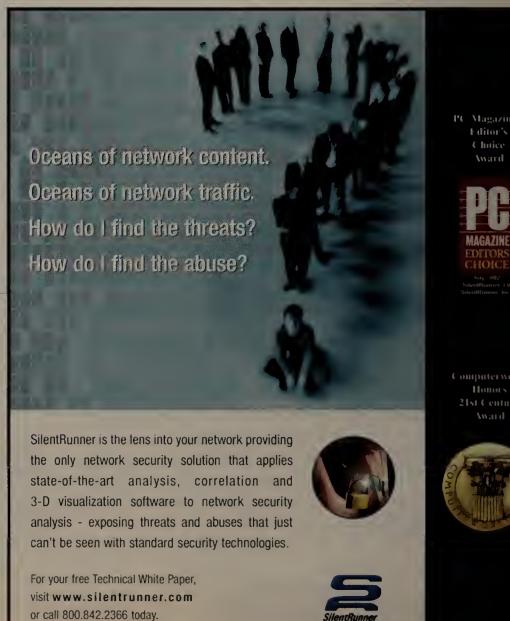
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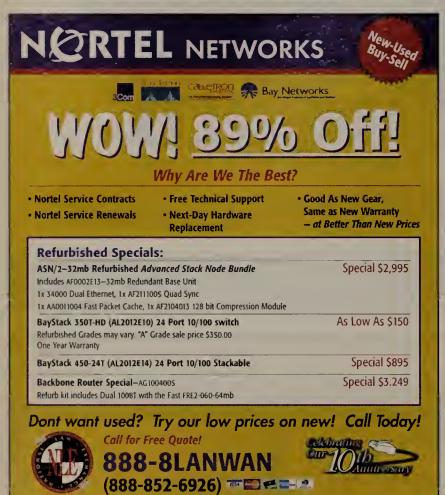


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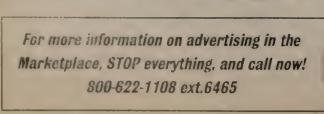
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Programmer Analyst
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development of software applications that incorporate Oracle cations that incorporate Oracle relational database management systems. Requirements include bachelor's degree or equivalent, two years of experience in this type of software development, PowerBuilder, visual basic, and working knowledge of designing and developing oil and gas software applications.

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Oracle Database Administrator Design, install, maintain and adbase management Engage in database and related software application design and development. Requirements in clude bachelor's degree, two years of Qracle database ad ministration experience, working knowledge of SDE administra-tion, spatial data management, and C. Job I.D. Number: 104

As part of post-sales implementation process, engage in data conversion from legacy systems to land management oil and gas software applications. Require-ments include master's degree or equivalent, two years of experience in ETL conversion from legacy systems to Oracle, working knowledge of land management oil and gas software applications. Loader, and Brio Query des tool. Job I.D. Number: 105

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Kbkids.com, a leader in e com merce, seeks applications for the following positions which are located in Denver, CQ. Please send resumes by mail to Francis Gonzales, HR Dept., Kbkids.com, 1099 18th St. Ste 1000 Denver CQ 80202 and please specify the job I.D. number for the position you are applying for.

Sr. Software Engineer Design and develop, at a senior level, web-based and three-tier Oracie relational database man egement systems. The position requires a masters degree or equivalent in computer science, CIS, electronics or a related field designing and developing Qracle database software applications and related skills. An applicant must also have working knowledge in a number of areas including Designer 2000, Oracle Reports and object oriented design and analysis methodologies, Job I.D. SSE

<u>Sr. Database Administrator</u> Develop and administer Qracle databases that run on the UNIX and Linux piatforms. Instali and and patch applications. Engage analysis and design, application program development and proactive performance analysis monitoring and tuning. Perform hot backups, hot standby data-bases and data guard configuration. Design, configure and administer Oracle Parallel and Real Application Cluster Database Servers. Engage in data conver sion/migration, development of budget and project proposais and project management. The position requires a bachelor's degree or foreign equivalent in Computer Science or related field (including Civil Engineering) technologies given above. Job I.D. SDBA.

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Bach degr in Comp Sci or Info Sci IT mgr exp w/same specific knowl/duties as above

5 yrs IT exp incldg 2 yrs IT mg exp w/ seme specific duties

Resume to: Arvato Servs Inc. Attn: HR (IC), 28210 N. Ave Stanford, Valencia, CA 91355

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SYSTEMS ANALYSTS for Oakbrook Terrace, IL office. Must be able to evaluate, analyze, design, configure, deploy, debug, provide user acceptance, plan implementation, and integrate with other systems, applications and data conversion. Shall manage and support high availability systems, disaster recovery, backup and storage Arrays. Shall be working under the supervision of a Project Leader/Manager Skills: 4+ years UNIX systems and application administration and previous experience with Sun Solaris, HPUX, AIX and AS400. Bachelors Degree in Computer science or related field of study. 40 hrs/wk. ONLY OUALIFIED U.S. WORKERS NEED APPLY. Send Resume to HR manager, Nextek Systems Inc. 18W 140 Butterfield Road, 15th Floor, Oakbrook Terrace, IL

A rehabilitation services company located in Warren, Michigan has 2 openings for system analysts The positions require a minimum of a bachelor's degree or equivalent in computer science, engineering or any field with computer courses and at least six months experience as a programmer. Responsibilities include: preparing reports, troubleshooting hardware/software and reviewing computer system capabilities. Send Resume: Administrator, Therapeutic Connection, Inc., 28111 Hoover, Suite 7-B, Warren, Michigan 48093

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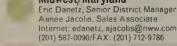
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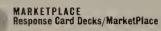


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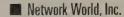
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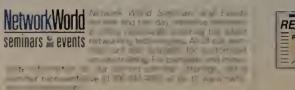
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Convergence

continued from page 1

help desks.

"Traditional businesses like ours are . . . on the conservative side. We're not willing to jeopardize our brand name," says Jeff Fountaine, a network analyst with Armstrong World Industries, a Lancaster, Pa., maker of industrial and home flooring and ceiling products. Among his concerns would be a phone order from going awry because of poor sound quality over an IP link.

Still, the potential cost savings are strong enough that Armstrong is willing to give VolP a shot for certain applications. The company is planning to test an internal campus-to-campus IP telephony deployment before delving deeper into the technology.

Quality measurement

In a recent Network World Survey of 250 IT executives, the top perceived drawback for network convergence was the lack of quality-of-service (QoS) assurance on corporate networks. Almost half of those surveyed said that the quality of IP voice was a drawback.

With voice quality being such a sticking point, the trick is to come up with a good way to ascertain whether your network can support toll-quality VolP. Some experts say there are hard tests and metrics for proving an IP telephony system, while others say the process is more art than science.

Factors that might diminish the quality of an IP phone conversation rarely lie in the actual VoIP gear anymore, says Mike Hommer, manager of lab testing at Miercom, an independent IT test-

ing and consulting firm and a member of the Network World Global Testing Alliance.

"When we started testing VoIP products in 1997,80% of the metrics we looked at were related to the performance and voice quality. Now that's down to about 10%," he says. "The quality issues — as far as IP voice equipment being able to efficiently encode and decode voice — have become less of a concern."

The issue now is on the network, Hommer says.

"Some people may have no idea how good or bad their network is for supporting real-time protocols like voice," he says.

ff To test the voice quality, we pretty much just played it by ear. 99

Chris Ragsdale

Director of technology, Paulding (Ga.) School District

Network latency is the No. 1 killer of real-time packetized voice traffic, Hommer says. The result of latency is jitter, which can cause an IP voice conversation to break up. Most IP voice products have jitter buffering technology or other technology that smoothes out and reorders voice packets before turning them into audio, but sometimes excessive network latency cannot be overcome.

Packet analyzers and port mirroring applications can be used to measure IP traffic volume and patterns to determine the sources of latency on a LAN or WAN. There are also voice-specific tests

and methods that can be used for a finer level of testing.

One time-tested method for determining voice quality is the Mean Opinion Score (MOS), a test accepted by the International Telecommunications Union whereby a sample of 40 or more people from different ethnic or language backgrounds are given an audio sample that's several seconds long to listen to, and each person rates the quality of the audio on a scale from 1 to 5. By ITU standards, 5 is a "perfect" MOS score, while 4 is considered "toll-quality" or a high enough standard for delivering land-line service by public switched telephone network carriers.

"The good side of [MOS] is that you're using a human ear to determine voice quality," Hommer says. "The bad thing is that it doesn't take into account things like bidirectional speech quality," where a segment of speech might sound clear, but network congestion or inefficient routing might create pauses in a conversation, he adds.

Another metric for gauging VolP quality is the Perceptual Speech Quality Measurement (PSQM), which is a computer algorithm used in testing tools from vendors such as Agilent, Empirix, Finisar and NetlQ for checking out IP voice equipment and network performance. Hommer says these tools are useful but don't always produce accurate results. Some of the computerized metrics, he says, are so stringent, "that the algorithm gives it a bad score, but from a human ear standpoint, you can't tell the difference."

Hommer says a mix of MOS scoring and testing with tools based on standards such as PSQM can provide the most-accurate assessment of how a VoIP network might sound.

"If you are a 50-site enterprise rolling out VoIP, and you have your own internal test lab," you might want to consider buying testing equipment before deploying VoIP, Hommer says. However, with the average VoIP deployment being in businesses with fewer than 100 lines, high-powered testing tools that can cost from \$25,000 to \$50,000 might be out of reach.

"The best way to test quality is to just put phones out there and see what people say," says Matthew Liste, practice manager for ThruPoint, a network consultancy that specializes in IP telephony technology. He recently completed an IP telephony project for Merrill Lynch where more than 1,000 Cisco IP phones were deployed at a site in New Jersey. He says enlisting the help of employees can be useful in determining whether an IP PBX system or LAN

SOURCE: MORGAN STANELY SURVEY OF 250 CIOs

needs fine-tuning.

"If you put [IP] phones out and ask people to occasionally write down the quality of their calls [on an scale] from 1 to 5, you basically have a MOS score right there," Liste says. The advantage in that is minimal disruption to employees, he adds.

Another IP telephony consultant takes a more general approach.

"You can buy a lot of expensive equipment to test voice quality," says Susan Knott, global network architect for Pricewaterhouse-Coopers.

"But I've found that if my vice president of finance can talk to my CIO [over a VoIP connection], and they both say the quality of the connection is OK, then I say that's good enough," she says.

In an interview earlier this year, members of *The Seattle Times*' communications and IT staffs said they initially experimented with IP phones on an existing infrastructure consisting of shared 10/100M bit/sec Bay Networks hubs and Category 3 wiring.

"We had a phone on one hub that was averaging 60% to 70% utilization, and you would get some pops and snaps, but nothing the person on the other end noticed," said Paul DeWees, a network systems analyst.

At the Paulding School District in Georgia, Alcatel IP phone equipment was tested in a lab before phones and switches were deployed to 23 schools.

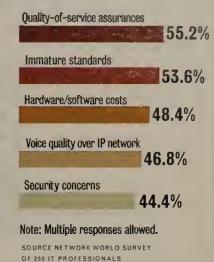
Paulding last year replaced sev-

Questioning VolP quality

While converging voice and data is on the minds of many IT executives...



... quality issues ranked high in a survey on major concerns.



eral separate key systems throughout the district with a single Alcatel OmniPCX system running over LANs at the schools and connected by a fiber-optic, Gigabit Ethernet IP backbone.

"To test the voice quality, we pretty much just played it by ear," says Chris Ragsdale, director of technology at the school district. "We did some live calls in a lab setup, with the new IP phones right next to the phones we had in place."

Ragsdale says the calls sounded comparable between the circuit-switched and IP gear, and the deployment went fairly smoothly except at one school where some older LAN hubs were being used. The hubs were soon replaced with 10/100 Alcatel switches with QoS support.

"The hubs were creating too many collisions, and that was causing unacceptable clarity," Ragsdale says. "It was just something unexpected we ran into—something we didn't figure on when we tested the stuff out in the lab."

Next week we examine outsourcing VoIP vs. doing it yourself.

More online!

Learn how to fine-tune your enterpresentwork for VoIP and other applications at our State of the WAN event.

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c tinued from page 1

as well as software and hardware vendors are forging ahead trying to lure IP telephony customers by adding features that traditional voice networks cannot readily support such as using voice commands to trigger telephone responses to e-mail.

For now at least the task of selling VoIP services and gear appears tougher as enterprise IP gear spending was down 18%

between the first and second quarter of this year, according to Infonetics Research. But indications are that worldwide spending will rebound by year-end, according to the firm's most recent report on packet telephony. Total spending for the year is projected to be \$1.1 billion.

It is a time when corporate budgets are being pinched and IT and telephony decision makers are reluctant to make major changes, says Johna Till Johnson, chief research officer at Nemertes Research and a Network World columnist. "Quantifying the value of having everything over IP is really fiendishly hard," she says. "You've got some guy out there that manages your PBXs, and you have to make his job temporarily a lot more difficult to do the transition."

Customers making the move

Despite this, some customers are mak-

ing the shift. Acuity, a consultancy and software development firm in Reston, Va.,

moved to new offices in July and traded its

in-house analog phone system over to reg-

ional IP service provider TalkingNets. The

service, called TalkingNets One Virtual PBX,

manages all the IP gear down to the telephones and gives Acuity users all the fea-

tures they would get if the company had

its own PBX, says Acuity President Paul

Shulman. And the monthly bill is half what

it would cost to own a PBX and buy sepa-

TalkingNets will formally take the wraps

off its services at Fall VON 2002 this week,

and it is far from alone. Verizon last week

announced a managed IP voice service

called IPT Watch that can be customized to

limit the amount of outsourcing customers

buy into. For instance, Verizon could man-

age only the voice hardware or it could

manage hardware along with quality of ser-

rate T-1 lines for voice and data, he says.



Altigen says its Alti-IP 600 phone can operate with the company's AltiServe IP PBX, or any H.323-compliant telephony server.

To further sweeten the prospect of VolP, vendors are using Web services technology to promote rapid development of new services that customers can't get anywhere else and ones that they could develop themselves.

Sylantro will demonstrate service applica-

tions it says were developed in two weeks by one Web engineer. One integrates Sylantro's telephony platform with voice-recognition gear from BeVocal that lets users establish voice commands to direct phone functions. Sylantro says it would have taken a team to write such software under older computer-telephony-integration models, but the company has developed Web services hooks that make the process much simpler for customers to write on their own.

Similarly, Alcatel is releasing a software developers' kit that lets customers integrate voice or messaging access to an OmniPCX 4400 through any browser-based interface, such as an intranet application. The kit costs \$4,470 and users would write custom applications using XML.

Alcatel also will display WebSoftphone, software that enables a PC with a headset to be used as an IP phone in conjunction with an OmniPCX IP PBX system. This gives the PC the same functionality as an Alcatel Softphone handset. The company will show two IP phones, the e-Reflexes 4010 basic-feature phone and the e-Reflexes 4035, which has 45 programmable buttons and is meant to be a call attendant console.

NetCentrex will demonstrate service provider software called MyCall, an IP telephony application that lets providers set up new customer services and lets customers manage the call features they buy using a Web tool called Subscriber View. They can use it to set up such features as different voice mail messages to play depending on the calling party, call forwarding and creating address books. A MyCall tool called Administrator View lets providers create services and add new subscribers. The MyCall application runs on NetCentrex's Application Server in conjunction with its softswitch package.

Also this week:

- Sprint's equipment division, Sprint North, will announce IP interfaces for its traditional Coral PBX so it can connect to IP carrier networks and IP phones. Sprint also is introducing an IP phone.
- Lucent is expected to announce upgrades to its media server, but details were unavailable.
- Altigen will introduce its Alti-IP 600 phone based on the H.323 protocol and featuring 10 programmable buttons. It costs \$300.

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66 Quantifying the value of having everything over IP is really fiendishly hard. 97

Johna Till Johnson

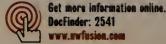
Chief research officer, Nemertes Research

vice and issue performance reports to customers. National service provider Broad-Vox will announce IP Centrex service at Fall VON 2002, giving customers PBX functions through network-based gear made by Sylantro. The provider also will offer a service that links phones and PCs to a network-based messaging system that lets customers return phone calls by clicking on a computer display of calls they missed.

WorldCom is expected to announce its WorldCom Connection voice over IP service bundle at the show.

The service will let customers send local and long-distance voice over their DSL, dedicated frame relay, ATM or Internet access data lines. The bundle also offers users Session Initiation Protocol firewall support for added security and network voice mail features. WorldCom first announced a VolP service,

called IP Communications, in January 2001.



Network World Senior Editor Denise Pappalardo contributed to this story.

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BackSpin Mark Gibbs



Casting a web of trust over spam

A few weeks ago (see www.nwfusion.com, DocFinder: 2545) I wrote the resigned and beaten words: "I'd like to officially announce that the war on spam has been lost." And I meant it. Given today's technology, spam has gone beyond the point

where we can do anything about it. The flood not only continues unabated but grows week by week.

After talking to shameless spammers like those at SIXNET (www.sixnet-io.com), SiteHoster and Feng Shui Paradigms, who all apparently feel that spamming is OK because they have bought an "opt-in only" list or that they are "educating" people about their technology or their bizarre philosophy, I know that something must be done. Something that works.

My despair stems from the use of today's technology. But what might we do tomorrow?

I have seen a hint of tomorrow: I've been running an experimental spam filter developed by some friends that appears to identify something better than 90% of spam messages. This has enormously reduced the amount of spam I have to handle, but what could we do nationally?

How about this: Last week I suggested that the government should implement a top-down strategy to creating a national cyberspace security strategy (DocFinder: 2546).

Briefly, the idea was that the government should set and adopt standards for their own use and require everyone who deals directly with the government to use those standards, and everyone who deals with those organizations to abide by those same standards. Thus we'd create a network of security that would enforce and maintain good security practices.

Add to the top-down national cyberspace security strategy the requirement that everyone who wants to play in this trust hierarchy also uses Pretty Good Privacy (PGP) or something similar to communicate (we'd all have to use compatible systems).

PGP has the concept of a "web of trust," where people who know you sign your "key" — a virtually unforgettable digital certificate — by attaching their key to your key as a reference. When they sign your key they effectively vouch for you. And if the person you present your key to trusts that person who sent you key, then by implication they can trust you.

There's a whole rich architecture to this concept — see DocFinders: 2547 and 2548.

PGP isn't that complicated and can be added to pretty much any mail system. And not only can it be used to establish trusted relationships, it also can be used to encrypt and sign any message or document.

Better still, the PGP concept works without centralized certification authorities, which would mean the

government wouldn't have to control a complex administrative infrastructure (whew!).

Once this system was in general use, when a message arrived your e-mail client would automatically first check whether it was from someone in your address book, and if so, then check to make sure that the message really was from that person. And if that sender wasn't in your address book, your e-mail program could check to see if that person is trustworthy by checking who vouches for them.

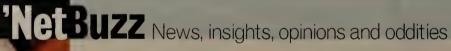
By using rules such as no mail from untrusted sources and no HTML mail or attachments from anything less than completely trusted sources (PGP has the concept of partial trust), it would remove many security issues.

Further, it would make anonymous spamming effectively impossible and, where a known user tried to spam, they quickly would get the signatures on their keys revoked by the signers.

As a side effect, it also would have a huge affect on the spread of viruses and worms by making their transmission vectors completely known.

Such a strategy would not only preserve privacy, it would actually support a national cyberspace security policy. Will we ever get such a solution implemented, or am 1 dreaming?

Secure thoughts to backspin@gibbs.com.





Orbitz doesn't really care that you hate their pop-ups

Buried deep on the FAQ page of the online travel site Orbitz is this rather revealing question: "How can I stop Orbitz pop-up ads?"

The question reveals that Orbitz at least understands and acknowledges the antipathy these ads generate among Internet users. The answer shows something else; namely that Orbitz — which pumps out more pop-ups than Mars does M&Ms — doesn't

really give a whit about who the ads annoy.

"To disable pop-up advertisements," the company tells us, "go to www.panicware. com/products.html and download Pop Up Stopper 2.9. It's free and will stop all pop-up advertising - not just Orbitz' ads."

This is sort of like a porn site operator recommending that parents use Surf Patrol or NPt Nanny to shield their children from smut: at best, it's disingenuous; at worst, it adds insult to injury.

The pros and cons of pop-up blockers might be a topic for another day — coleague Keith "Cool Tools" Shaw speaks highly of Pop-up Stopper and PopNot from High Density Software in his column at www.nwfusion.com, DocFinder: 2544. Today, I wanted to raise a more basic question. Why do legitimate companies show such callius disregard for the sensibilities of potential customers by flooding their desktups with these intrusive ads?

The ar swer from Orbitz also is revealing.

i) bit. Sin fly by nighter. The company handles on ine ticketing for a Who's Who I to I is industry, including American, America West, Delta Northwest, United Sin Airways

Constate of the air ine industry and the health of some of these carriers, you the state of the air ine industry and the health of some of these carriers, you the state of the air ine industry and the health of some of these carriers, you

why does Orbitz do it?

"This is just part of the mix of all of our online and offline advertising," a spokeswoman tells me. "We monitor the returns on our advertising every day and the popup ads really result in a significant number of conversions."

Translation: We're making money off them.

"Although you have an opinion about pop-ups — or pop-under ads, which is what we use — we find that people are not only clicking through but they are buying tickets," she says. "The results are what is meaningful."

Translation: People might complain, but that doesn't stop them — or at least it doesn't stop others — from being sucked into Orbitz via the pop-ups.

So does that mean it's fair to say that the company considers complaints about pop-ups to be an acceptable byproduct of doing business that way?

"No," the spokeswoman says, offering little by way of elaboration.

After objecting to such "prejudicial questions," she promises to get back to me with a "meaningful" set of numbers Orbitz has collected that presumably shows click-throughs from pop-ups dwarfing e-mail complaints about the ads.

I say presumably because she never got back to me. As for the broader defense of pop-ups, you might make the same case for spam: It works, so why not? ... Only spammers bother to make that case.

Here's an anecdote that Orbitz might find meaningful: After mentioning to another editor at *Network World* that I was writing about pop-ups, he told me he was recently planning a pleasure flight and the thought had dawned on him to check out Orbitz. "I'd heard you can get good prices there," he said.

However, this fellow decided to pass on that opportunity to save a few bucks. He says he just couldn't bring himself to patronize a site that so often intrudes on his desktop. Something tells me he isn't the only one avoiding Orbitz for that reason.

In the unlikely event that anyone wants to defend Orbitz, the address is buzz@mww.com.



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